7133D/11D Monitor

Service Guide

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Introduction

This manual describes a low-cost high-performance 14-inch color, dual-frequency monitor. It is compatible with all IBM 8514 modes at 31.5-KHz and 35.5-KHz as well as the SVGA mode at 35.16-KHz.

It has the following features:

- energy-saving functions
- 0.28-mm trial pitch anti-glare CRT
- user controls are all located on the front panel

  - contrast
  - brightness
  - power On/Off
  - H-size
  - H-phase
  - V-size
  - V-center

- power On/Off indicator
- suspend mode indicator with flashing
- universal power supply
- power On auto degaussing
- tilt and swivel base
- detachable power cable
- VGA resolution at 31.5KHz

  - 640 x 350
  - 640 x 400
  - 640 x 480

- 8514A resolution at 35.52KHz
- SVGA resolution at 35.16KHz
- automatic scanning horizontal frequencies at

  - 31.5-KHz
  - 35.16-KHz
  - 35 52-KHz
  - all vertical frequencies between 50-Hz and 90-Hz

- optional VLM function

1.1 Operational Specifications

1.1.1 Environment

Temperature	
Operating	10 - + 40 degrees Celsius
Non-operating	-20 to + 60 degrees Celsius

NOTE: *If tested without its packaging, the maximum non-operating temperature is 52 degrees Celsius*

Humidity	
Operating	20% to 90%, non-condensing
Non-operating	10% to 95%, non-condensing

Altitude	
Operating	0 to 3,048 m (10,000 ft)
Non-operating	0 to 12,192 m (40,000 ft)

NOTE: *Operating condition = without packing*
Non-operating condition = with packing

1.1.2 Electrostatic Discharge Requirements

This monitor must withstand 15KV test voltage of Electrostatic Discharge (ESD) and meet the acceptance criteria as specified in Acer ESD specification ES-809.

1.1.3 Safety Requirements

This monitor complies with the following safety standards and specifications:

110V Model

- UL compliance - standard for information-processing and business equipment, UL 1950
- CSA compliance - standard C22.2 No. 950-M89, data-processing equipment
- DHHS rule 21, sub-chapter J as of the manufacturing date

220V Model

- TUV compliance - IEC950 safety specification for business equipment
- TUV Ergonomic - IEC950 + MPRII + ISO 9241-3
- PTB - German X-ray emission standards
- ZH1/618 - German Ergonomic standard
- Demko - IEC 950
- Nemko - IEC 950
- Semko - IEC 950
- Femko - IEC 950

1.1.4 EMI Requirements

This monitor complies with the following RFI rules and regulations:

110V Model

- FCC compliance - FCC Rule, Part 15, Sub-part B, Class B
- VCCI compliance - VCCI Rule, Class 2

220V Model

- FTZ compliance - FTZ regulations No. 243/1991 for RFI suppression, Class B
- DNSF compliance - Scandinavia
- Low-radiation rule (MPR-II) is an option

1.1.5 Acoustics Noise

When the monitor is operating, the sound level is contained within 40 dB/A in the audible field.

1.1.6 Reliability

The MTBF of the monitor is greater than 40,000 hours excluding the picture tube.

1.2 Input/Output Signal Specifications

1.2.1 Input Signal Requirements

1. Signal Cable - directly attached to the unit

   - Video Inputs - This 15-pin mini D-sub connector is on the captive signal cable for IBM VGA, 8514A or compatible graphics adapters. The following lists the pin assignments:

Pin No.	Signal
1	Red Video
2	Green Video
3	Blue Video
4	Ground
5	EPS1
6	Red Ground
7	Green Ground
8	Blue Ground
9	No Connection
10	Sync Ground
11	Ground
12	No Connection
13	H. Sync
14	V. Sync
15	No Connection

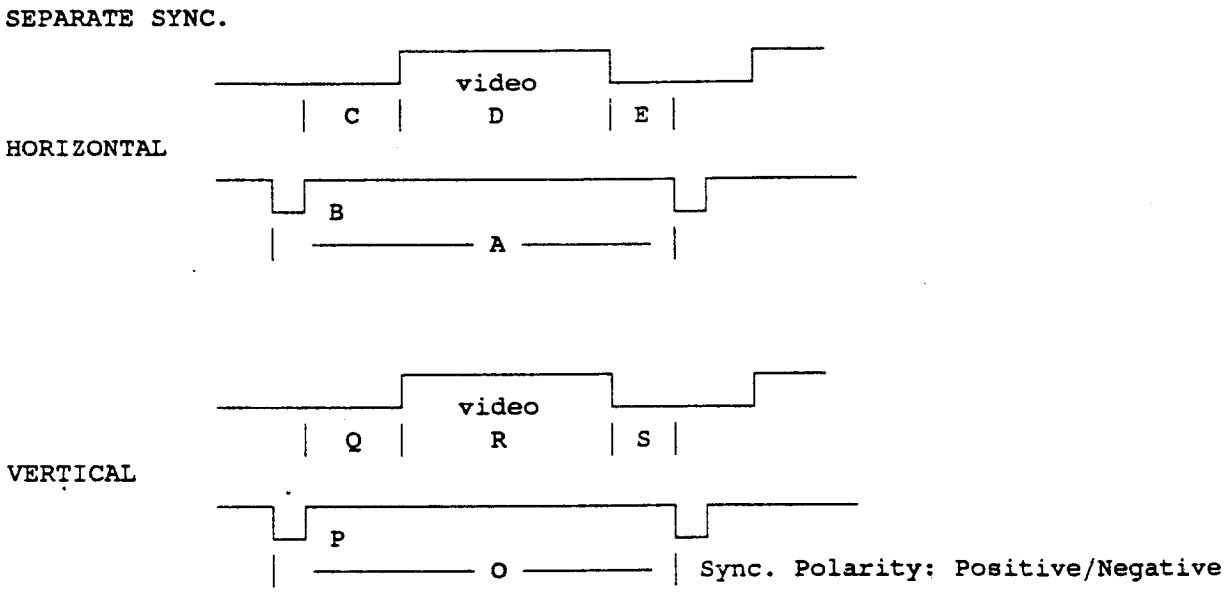
   - Cable Length: 1500 mm ± 20 mm

2. Video Signal : Analog 0.7 Vpp/75 ohm positive

3. Sync Signal

   - Separate SYNC : TTL level
   - Horizontal SYNC : positive/negative
   - Vertical SYNC : positive/negative

4. Timing. The following figures show the video signal timing:



Preset Timing

VGA/8514A/SVGA Timing

	VGA Compatible			8514A Compatible	SVGA Compatible
fH	31.47KHz			35.52KHz	35.16KHz
Aus	31.77KHz			28.15KHz	28.44KHz
Bus	3.81KHz			3.92KHz	2KHz
Cus	1.59KHz			1.25KHz	3.56KHz
Dus	26.05 (w/border)			22.80KHz	22.22KHz
Eus	0.318KHz			0.18KHz	0.67KHz
fv	70 08Hz	70.08Hz	59.94Hz	87Hz	56.25Hz
Oms	14.27Hz	14.27Hz	16.68Hz	11.5Hz	17.78Hz
Pms	0.064Hz	0.064Hz	0.064Hz	0.113Hz	0.06Hz
Qms	1.68Hz	0.86Hz	0.76Hz	0.563Hz	0.63Hz
Rms	11.502Hz	13.157Hz	15.762Hz	10.81Hz	17.07Hz
Sms	1.02Hz	0.091Hz	0.095Hz	0.014Hz	0.03Hz
Display Resolution	640x350	640x400	640x480	1024X768 (interlaced)	800x600
Polarity H/V	+/-	-/+	-/-	+/+	+/+

5. Input Signal Quality

Rise/Fall time	Video Signal : less than 10ns Horizontal Sync: less than 50ns Vertical Sync: less than 100ns
TTL Signal Level	The levels of Horizontal and Vertical Sync are: TTL level with a high level of 2.4- 5.5V, and a low level of 0 - 0.2 V.
Video Signal Level	When terminated with an ideal 75 ohm termination, the video signal will have a range of 0V to 0.7V (nominal), and its full scale output will be 0.7V, and the black level will be between 0V and 0.1V.

1.2.2 Power Supply Requirements

Power Management

The monitor handles the power-saving modes according to the final VESA specification with H-sync and V-sync recognition. The green power LED flashes only at OFF mode as follows:

	H-Sync	V-Sync	Power	LED	EPS1
Stand-by	Inactive	Active	> 30W	On	GND
Suspend*	Active	Inactive	< 30W	On	GND
Off	Inactive	Inactive	< 5W	Flash	GND
Burn-in	Inactive	Inactive	> 30W	On	Floating

NOTES: *The picture should appear within 10 seconds after the system wakes up.*

The performance of the unit should be at the normal specifications within 30 minutes after the system wakes up.

Input Power Requirements

1. Input Voltage Range - the unit shall meet all the operating requirements with an input voltage range of 90 - 264 Vac.
2. Input Current -

Maximum Input Current	Measuring Range
(MAX) 2.2 Arms	90 Vac - 264 Vac

3. Frequency Range - the unit shall operate within a frequency range of 47Hz to 63Hz.
4. Inrush Current - Power supply inrush current shall be less than the ratings of its critical components (including power switches, fuse, rectifiers and surge limiting device) for all conditions of line voltage.
5. Regulatory Efficiency - 65% minimum (measuring at 115Vac and full load)
6. Synchronization - The switching frequency of the unit must be designed to synchronize to the horizontal frequency of the display unit.

* Suspend mode is an option available to customers. Unless requested, the suspend mode is the same as the Off mode.

7. Power Line Transient Immunity - The power supply shall function properly after being subjected to a 0.3us/1.2us, 2000 volt high peak pulse, or 5ns/10ns, 1500 volt fast peak pulse applied either differentially or single endedly to a line and neutral at any phase of the power line voltage and shall not cause unsafe or unrecoverable errors.

8. Maximum Power Consumption - 90 Watts

Output Power Requirements

The power circuit supplies DC power outputs as follows:

Output	Normal	Regulation	Load Current Range
1	90/105/115	±3%	0.14A-0.50A
2	90V	± 3.5%	0.02A-0.15A
3	12V	± 5%	0.2 - 0.80A
4	6.3V	± 3.5%	0.51A-0.75A

The above output voltage is dependent on fH (horizontal frequency), it changes from 62V to 100V. When fH is fixed, its regulation is a total of 6% from minimum to maximum output.

AC Power Inlet

The display unit shall be supplied with an AC power NICOON NC-174 (or equivalent), to be located at the rear of the display.

Power Cord

Each display unit shall be supplied with an 1800-mm king cord power cord KC-003 or its equivalent.

1.2.3 CRT Requirements

The color picture tube is 14"90 degrees and has the following features:

- type: 14" in-line , dot matrix
- dot pitch: 0.28mm dot triad
- phosphor: P22 or equivalent
- light transmittance: 57% (semi-tint)
- surface of face plate: non-glare

1.3 Functional Specifications

All the tests to verify specifications in this section must be performed under the following standard conditions unless otherwise noted. The standard conditions are:

Temperature	25 + -5 degrees Celsius
Magnetic Field	No additional magnetic field near the side, and the CRT faces East
AC Line Input Voltage	90Vac to 264Vac, 50Hz or 60Hz
Warm-up Time	30 minutes minimum
Checking Display Mode	All the present modes

1.3.1 Display Quality

Display Data Area (with 20 ft-1 at full white pattern)

1. Horizontal: 250mm ± 4mm
2. Vertical: 187mm ± 4mm

Video AMP Performance

1. Video bandwidth: 45 MHz
2. Resolution: 1024 x 768 (center)
3. Effective rise teff time: 14ns maximum
4. Ringing: 15% maximum, first overshoot
   4% maximum, second overshoot
   1% maximum, third overshoot
5. Sag: 5% maximum (at horizontal frequency)

Light Output

1. At 3" block pattern (ABL is non-working) : 60Ft-L minimum
2. At full-white pattern (ABL is working): 30FT-L Typical

All the above is based on the conditions that brightness control, and contrast are set at maximum position.

Contrast Adjustment Range:

Over 15dB

Brightness Adjustment Range

At contrast control set at maximum level, adjusting Brightness control from minimum to maximum position, the light output of 3" block pattern shall be increased more than 20FT-L. If adjusting brightness control to minimum position, the 3" block pattern shall be extinguished when contrast is set also to minimum.

Linearity (set to 20-Ft-L at full white pattern first) at crosshatch pattern.

1. Vertical Non-linearity: 7% maximum.
2. Horizontal Non-linearity: 10% maximum.

Geometric Distortion (with 20FT-L at full white pattern)

1. Top/Bottom Pincushion: 2.0 mm maximum
2. Side Pincushion: 2.5 mm maximum
3. Top/Bottom Barreling: 2.0mm maximum
4. Side Barreling: 2.0 mm maximum
5. Vertical Trapezoid: 3.0 mm maximum
6. Horizontal Trapezoid: 3.0 mm maximum
7. Tilt: 1.0 mm maximum
8. Orthogonal: 2.0 mm maximum
9. Picture Centering: 6.0 mm maximum

Size Stability

Picture growth from 5Ft-L to maximum Ft-L shall be less than 4mm with full white pattern (double side)

Swing and Jitter

Swing and Jitter are not permitted in the conditions stated as follows: (the distance of viewing is 30 cm from eyes to screen)

1. AC power input fluctuates from 90Vac to 264Vac, 50Hz or 60Hz
2. Brightness and contrast VRs change from maximum to minimum or vice versa

Focus

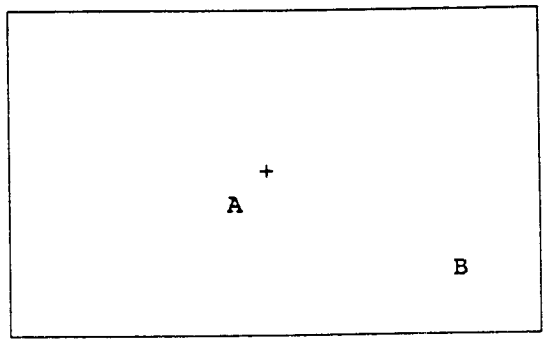
(The distance of viewing is 30 cm from eyes to screen.) Under the condition of luminance of 20Ft-L at full white pattern. (Brightness VR minimum, contrast VR adjusted) all # characters on the screen in the "#" pattern will be clear.

1.3.2 Color Quality

Misconvergence

Use "crosshatch" white pattern, then set the brightness VR at the raster disappear and contrast VR and contrast VR maximum to examine the convergence.

The misconvergence must strictly meet the requirements stated as follows:



187mm

A<=0.30mm
B<=0.50mm

250mm

Moire

(The distance of watch is 30 cm from eyes to screen). In the pattern of all green, all blue, all red, or all white, and the luminance is higher than 18Ft-L, moire is not allowed to appear.

Impurity

Impurity should not appear in the pattern of all green, all blue or all red, white, the brightness is 0-max Ft-L and the screen display is set to East direction.

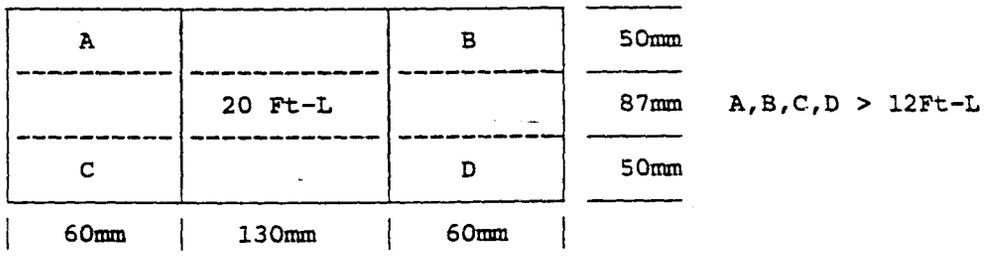
White Balance

At the condition of all white pattern, X = 0.281, Y = 0.311, white is required to meet the following specifications when brightness VR is set at the raster disappear and contrast VR changed at 3" block pattern.

40 Ft-L = X, Y variety value < 10%
20 Ft-L = X, Y variety value < 10%
5 Ft-L = X, Y variety value < 20%

Uniformity

When the display unit is displayed with mosaic pattern at the central brightness of 20 Ft-L, the corners (A,B,C,D) brightness must be > 12 Ft-L.



Indicator of Testing Positions

Degaussing

Degaussing occurs automatically when the monitor is turned on and is sufficient to demagnetize the CRT to any possible change in the Earth's magnetic field from movement or shipment It should cooled down at least 20 minutes before power on.

1.3.3 Controls and Presetting

User Controls (Under the front panel)

1. Power-On/Off switch - rocker switch
2. Brightness
3. Contrast
4. Vertical Center
5. Horizontal phase - with detent
6. Horizontal size - with detent
7. Vertical size - with detent

Presetting

When all external controls of H-size, H-phase and V-size are set at detent position, all the following three modes are preset by internal controls to set them at the right size and position.

1. VGA mode
2. SVGA (800 x 600) mode at 35.16KHz.
3. 8514/A (1024 x 768), non-interlaced mode at 35.52KHz.

1.4 Physical Specifications

1.4.1 Physical Dimension

Overall Dimensions	356 mm (W) x 348 mm (H) x 380 mm (D)
Net Weight	11.3 kg.

1.4.2 Construction and Materials on Outer Surface

Materials	Plastic
Color	Light gray (To be Defined by OEM)

1.4.3 Base and Swivel

Tilt	-5 /+15 degrees
Swivel	-45 /+45 degrees

1.4.4 Marking and Labels

Reference and Labels (Rear Panel)	Reference Numbers
	Manufacture data
	Agency Approvals
	Power Ratings
Controls and Connectors	AC power cord input: abbreviated labels
	User's controls: standard print

1.4.5 Packaging

Carton Dimension	487 mm (L) x 458 mm (W) x 408 mm (H)
Shipping Weight	13.2 kg

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Alignment Procedure

2.1 Preparation for Alignment

2.1.1 Equipment and Tools Required

Standard Test Equipment	Voltmeter
	Dual trace oscilloscope
	High voltage probe
	Hand tools as required
	Color analyzer, Minolta TV2150 or equivalent
	Computer with Acer 8215 card or equivalent

2.1.2 Procedure of Preparation

1. Pre-set all VRs to the center position except R/G/B bias VR105, 106, 107 counter-clockwise to maximum.
2. Setup the unit and warm it up for at least 30 minutes.
3. The signal mode is 31/35KHz.

Mode	Frequency (H/V)	Display
1	31.47K (+/-)	640 x 350 (VGA1)
2	31.47K (-/+)	640 x 400 (VGA1)
3	31.47K (-/-)	640 x 480 (VGA1)
4	35.51K (+/+)	1024 x 768 (8514A)
5	35.15K (+/+)	800 x 600 (SVGA1)

2.2 B+ Adjustment

1. Input mode 35KHz (SVGA1 800 x 600) with cross hatch pattern.
2. Set brightness and contrast keys to maximum position.
3. Adjust switch power supply VR601 to make video B+ 103 +/- 0.5 VDC.

2.3 H-Hold Adjustment

1. Input mode 31KHz (VGA1 640 x 400) with full white pattern.
2. Short TP3 to the nearest ground.
3. Adjust VR253 (H-Hold) to make sure the picture almost stands up, then remove the short wire and make sure that the pitch is stable.

2.4 Geometry Adjustment

1. Input mode 31KHz (VGA1 640 x 400) with full white pattern.
2. Set external contrast VR to maximum position.
3. Set external brightness VR to raster just cut off position.
4. Set external H-size, H-phase, V-size, V-center VRs to the center position.
5. Adjust VR256 (internal H-phase VR) to center the horizontal phase.
6. Adjust VR250 (pincushion VR) to meet pincushion specification.
7. Adjust VR302 (internal H-size VR) to meet horizontal size specification.
8. Adjust VR252 (internal V-size VR) to meet vertical size specification.
9. Check performances of all modes.

2.5 Background Adjustment

1. Input mode 31KHz (VGA1 640 x 400) with background pattern.
2. Set external contrast and brightness VRs to maximum position.
3. Check the bias VRs of VR105, 106, 107 at counter-clockwise maximum position.
4. Adjust screen VR of FBT to obtain twilight raster about 1 to 1.5 Ft-L.
5. See which gun appears first, then adjust the two bias VRs of the other two non-appearing guns to achieve the color temperature meet specifications: x =0.281 +/- 0.005; y = 0.311 +/- 0.005.
6. Adjust screen VR of FBT again to let the raster about 1 to 1.5Ft-L.

2.6 Foreground Adjustment

1. Input mode 31KHz (VGA1 640 x 400) with 3" block pattern.
2. Set external contrast VR to maximum position.
3. Set external brightness VR to maximum position.
4. Check the drive VRs of VR103, 104, and sub-contrast VR306 at center position.
5. Adjust sub-contrast VR306 to let the light output become 70 Ft-L.
6. Set external brightness VR to minimum position.
7. Adjust contrast VR to let the light output become 15 Ft-L, then adjust VR103 to 104 to let the color temperature meet the specifications: x + 0.281 +/- 0.003; y = 0.311 +/- 0.003.
8. Set contrast VR to maximum, then re-adjust VR306 to let the light output become 70 +/- 2 Ft-L.

2.7 ABL Adjustment

1. Input mode 31 KHz (VGA1 640 x 400) with full white pattern.
2. Set external contrast and brightness VRs to maximum position.
3. Check the ABL VR305 at the center position.
4. Adjust ABL VR305 to let the light output become 30 +/- 2 Ft-L.

2.8 Power Saving Function Check

1. Input mode 31 KHz (VGA1 640 x 400) with full white pattern.
2. Set external contrast and brightness VRs to maximum position.
3. Remove H-Sync, the video and raster should be extinguished, the power consumption is around 55W.
4. Remove V-Sync, the power consumption should be less than 5W and LED flash.
5. Input H-Sync and V-Sync, the video should be exhibited again and LED is on.

2.9 Focus Adjustment

1. Input mode 35KHz (8514A 1024 x 768) with "Reverse Character Pattern" (Windows Application).
2. Set external contrast VR to maximum position.
3. Set external brightness VR to raster just cut off position.
4. Adjust focus VR of FBT to make the video area focus clearer.

2.10 Convergence Adjustment

1. Input mode 31KHz (VGA1 640 x 400) with cross hatch pattern.
2. Adjust 4-pole and 6-pole of Yoke to meet the specification.

2.11 Geometry Specification

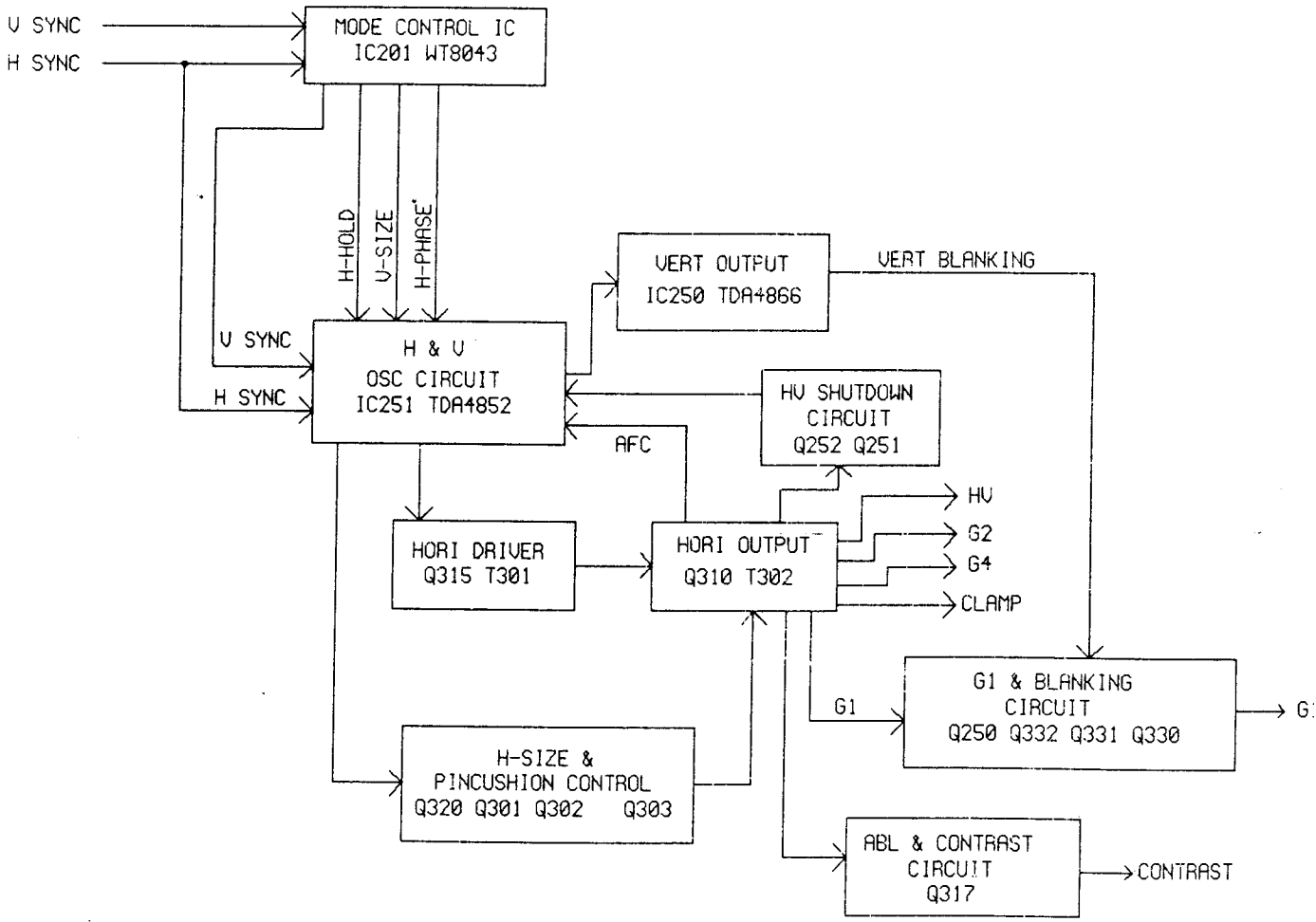
Item	Description	Specification
1	Hori Size	250 ± 4 mm
2	Vert Size	187 ± 4 mm
3	Side Pin	≤ 1.5 mm
4	Top/Bottom Pin	≤ 2.0 mm
5	Side Barrel	≤ 1.0 mm
6	Top/Bottom Barrel	≤ 1.0 mm
7	Trapezoid	≤ 3.0 mm
8	Video Offset	≤ 4.0 mm
9	Parallelogram	≤ 3.5 mm

Chapter 3

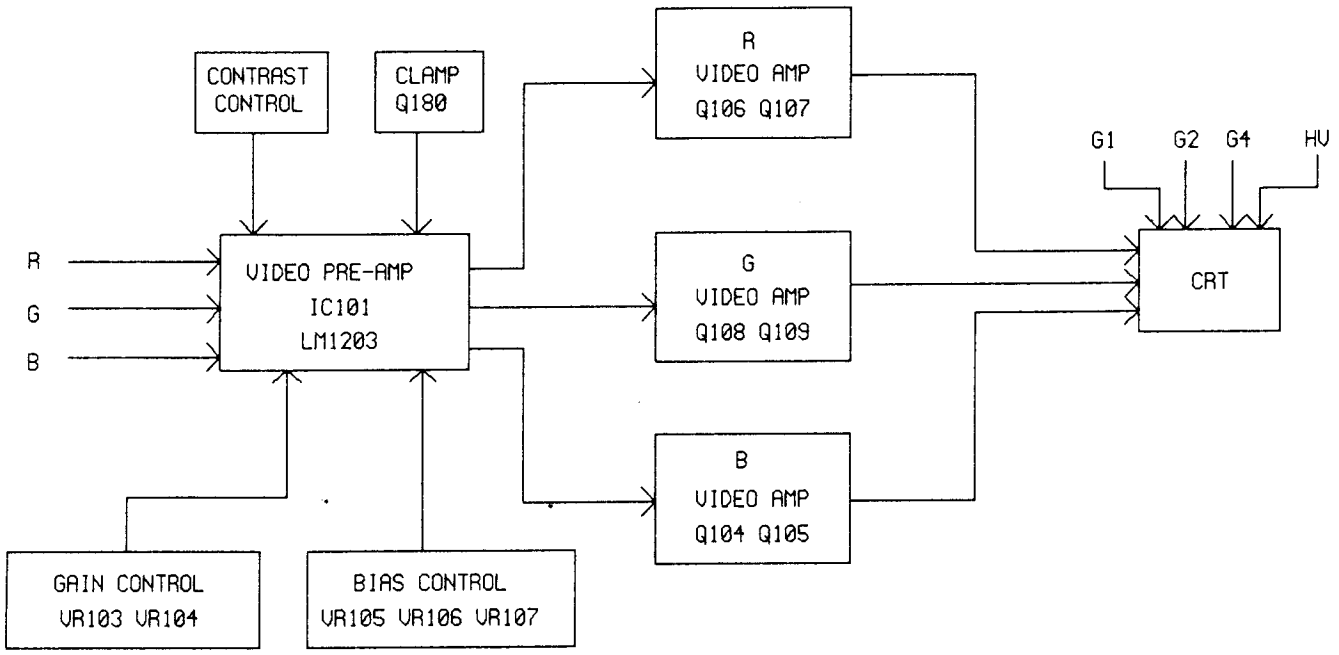
Circuit Operation Theory

3.1 Block Diagrams

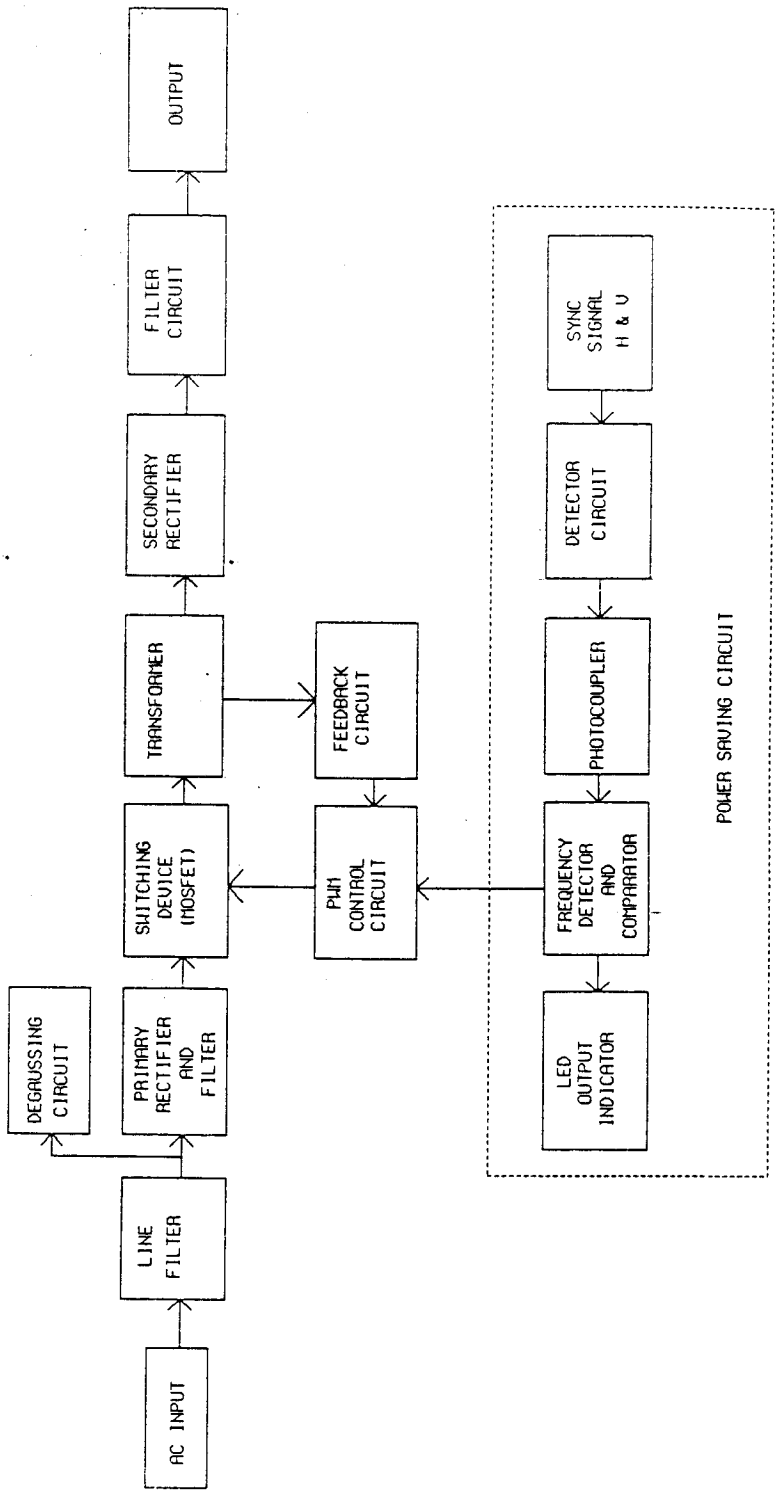
Deflection CKT Block Diagram



Video CKT Block



SMPS CKT Block Diagram



3.2 Mode Control Circuit

1. IC201 WT8043 is used for mode control. We can use it to detect the following timing:

Mode	Frequency (H/V)	Resolution
1	31.47K (+/-)	640 x 350 (IBM VGA)
2	31.47K (-/+)	640 x 400 (IBM VGA)
3	31.47K (-/-)	640 x 480 (IBM VGA)
4	35.51K (+/+)	1024 x 768 (8514A)
5	35.15K (+/+)	800 x 600 (SVGA1)
6	37.86K (+/-)	640 x 350 (VESA VGA)
7	37.86K (-/+)	640 x 400 (VESA VGA)
8	37.86K (-/-)	640 x 480 (VESA VGA)
9	37.879K (+/+)	800 x 600 (SVGA2)

2. Pinout of WT8043

Pin No	Description
1	Oscillation in
2	Oscillation out
3	Horizontal Sync Input
4	Vertical Sync Input
5	Horizontal Sync Output
6	Vertical Sync Output
7	F45K - active low when the horizontal frequency is greater than 45KHz.
8	F36K - active low when the horizontal frequency is greater than 36KHz
9	Ground
10	F33K - active low when the horizontal frequency is greater than 33KHz
11	Active low in 31KHz and 37KHz 640 x 350
12	Active low in 31KHz and 37KHz 640 x 400
13	Active low in 31KHz and 37KHz 640 x 480
14	Active low in 35KHz 800 x 600
15	Active low in 37.5KHz 800 x 600
16	Active low in 48KHz 800 x 600
17	Active low in 35KHz 1024 x 768 interlace (8514A)
18	Active low in 48KHz 1024 x 768 non-interlace
19	No connection
20	VCC +5VDC

3. Horizontal Phase Preset

- R202 is for 35KHz 8514A horizontal phase preset.
- R204 is for 37.5KHz 800 x 600 horizontal phase preset.
- R205 is for 35KHz 800 x 600 horizontal phase preset.
- R206 is for 31KHz IBM VGA horizontal phase preset.
- R207 is for 37KHz VGA horizontal phase preset.

4. Vertical Size Preset

- R214 is for 31KHz 640 x 480 IBM VGA vertical size preset.
- R215 is for 31KHz 640 x 400 IBM VGA vertical size preset.
- R216 is for 31KHz 640 x 350 IBM VGA vertical size preset.
- R217 is for 37KHz 640 x 480 VESA VGA vertical size preset.
- R218 is for 37KHz 640 x 400 VESA VGA vertical size preset.
- R219 is for 37KHz 640 x 350 VESA VGA vertical size preset.

5. Horizontal Size Preset

- R228 is for 35KHz 8514A horizontal size preset.
- R240 is for 37.5KHz 800 x 600 horizontal size preset.
- R241 is for 35KHz 800 x 600 horizontal size preset.
- R242 is for 31KHz IBM VGA horizontal size preset.
- R2415 is for 37KHz VESA VGA horizontal phase preset.

6. Since WT8043 can not distinguish 31KHz and 37KHz VGA, use Q205, Q202, Q201 and Q208 to distinguish 31KHz IBM VGA and 37KHz VESA VGA.

7. Q204, Q206, Q207 sends control signals F45A, F36A, F33A to control the switching power supply. This way, the switching power supply can send the correct horizontal B+ to FBT.

8. From R220 to R227 and R230 to R232 are used for pull-up resistors.

9. Truth Table for WT8043

Hs Frequency	F33K	F36K	F45K
Hs < 33KHz	1	1	1
33KHz < Hs < 36KHz	0	1	1
36KHz < Hs < 45KHz	0	0	1
45KHz < Hs	0	0	0

3.3 Horizontal and Vertical Oscillation Circuit

1. IC251 TDA4852 merges the horizontal oscillation stage and vertical oscillation stage.
2. The IC251 TDA4852 Pin Assignment:

Pin Number	Description
1	VCC +12VDC
2	AFC and HV shutdown
3	Horizontal oscillation output
4	Ground
5	Vertical oscillation output 1
6	Vertical oscillation output 2
7	Ground
8	No connection
9	Horizontal sync input from M301
10	Vertical sync input from IC201 pin 6
11	Parabolic waveform output for pin cushion compensation
12	Capacitor for amplitude control
13	Vertical size control
14	Pin cushion control
15	Vertical oscillator resistor
16	Vertical oscillator capacitor
17	PLL1 phase
18	Horizontal hold control
19	Horizontal oscillator capacitor
20	PLL2 phase, Horizontal phase control

3. Q253 reduces the horizontal jitter.
4. Horizontal Hold Control:

   - VR253 is for 31KHz horizontal hold preset.
   - R266 is for 35KHz horizontal hold preset.
   - R260 is for 37KHz horizontal hold preset.

5. Pin cushion Control

   - VR250 is for 31KHz pin cushion preset.
   - R267 is for 35KHz pin cushion preset.
   - R261 is for 37KHz pin cushion preset.
   - R298 is for 31KHz and 37KHz 640 x 350 pin cushion preset.

6. R255 makes the vertical linearity correct.
7. R252 can make the compensation for pin cushion when vertical size is adjusted.

3.4 Vertical Output Circuit

1. IC250 TDA4866 is used for vertical output amplifier.
2. The IC250 TDA4866 Pin Assignment:

Pin Number	Description
1	Vertical oscillation input 1
2	Vertical oscillation input 2
3	VCC +12VDC
4	Vertical output V-
5	Ground
6	Vertical output V+
7	Flyback supply voltage + 40VDC
8	Vertical blanking pulse
9	Feedback input

3. Q250 sends the vertical blanking pulse to G1.
4. VR254 is used for vertical center control.

3.5 H.V. Shut Down Control

Q252 and Q251 are used for HV shutdown circuit. When HV is greater than 27KV, the voltage of FBT pin 9 (+40V) will turn on ZD250. Q251 and Q252 are also turned on. IC251 TDA4852 pin 2 gets a high level voltage to terminate the horizontal oscillator.

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3.6 Horizontal Output Circuit

1. Q315 and T301 are used for horizontal driver.
2. The "Diode Modulation Structure" is used for the horizontal output circuit.
3.
   - Q310 is horizontal output transistor.
   - L302 is Linear coil.
   - C312 is Cs capacitor.
   - D307 and D308 are damper diodes.
   - C314 and C315 are tuning capacitors.
   - L303 is the modulating coil.
4. Q320 and Q301 are used as amplifiers for parabolic waveform. Q302 and Q303 merge the parabolic waveform of pin cushion and DC level of horizontal size control. It is used for "Diode Modulation" control.
5. B+ is 90 VDC in 31KHz, 103VDC in 35KHz, 113 VDC in 37KHz.

3.7 Spot Killer and Blanking Circuit

1. Spot Killer - when power is turned off, the residual electronic beam from the CRT burns the CRT phosphor. So it is necessary to make G1 more negative when power is turned off to stop the emission of the CRT electronic beam.
2. When power is on, +6.3VDC turns on Q332 . G1 voltage is around - 30VDC. When power is off, +6.3VDC goes to 0VDC. It turns off Q332. G1 voltage goes to - 180VDC to stop beam emission.
3, Blanking - vertical blanking signal comes from pin 8 of IC250 TDA4866. Q250 makes the signal go reverse and higher than coupling to G1. There will be no vertical retrace lines visible.

3.8 Power Saving

1. When the user does not make use the PC, the PC makes the monitor go into "Power Saving Mode". The PC must have power management program.
2. There are four Power Saving Modes:

Mode	Description
Standby Mode	PC removes the horizontal sync. In this mode, Q331 is turned off. It turns off Q332 at the same time. G1 goes to -180VDC. There is no video and raster shown on the screen. The monitor power consumption is about 55W.
Suspend Mode	PC removes the vertical sync. In this mode, switching power supply is shut down. The power consumption of the monitor is less than 5W.
Off Mode	PC removes the horizontal and vertical sync. In this mode, the switching power supply is shut down. The monitor power consumption is less than 5W.
Burn-in Mode	When the signal connector is connected to the PC, the "EPS1" is shorted to the ground on the PC side. Q330 is turned off. When the signal connector is disconnected from the PC, the "EPS1" is floated. It turns on the Q330. In this mode, Q332 is always on, even without horizontal sync. We can see the raster on the screen.

NOTE: *There is no CRT heater pre-heat in suspend mode. The suspend mode and off mode are combined.*

3.9 ABL (Auto Brightness Limit) Circuit

1. When the brightness is increased, the CRT beam current goes high. The beam current should not exceed 350 uA. It is necessary to limit the beam current to keep the CRT life longer.
2. When the brightness is increased, the CRT beam current goes high. The R350 and VR305 currents go high too. It creates more voltage drops on the resistors so the Q317 base voltage goes lower. It turns on Q317. The Q317 emitter is connected to the video contrast control. At this time, the contrast voltage is pulled down. The beam current is limited.
3. To change the ABL working point, it needs to adjust VR305. With full white pattern, it is recommended to adjust it to 30Ft-L.

3.10 Video Amplifier Circuit

1. The process circuit of R, G, and B are the same. Only the B circuit is discussed.
2. VR103 is used for video gain control. VR107 is used to cut off voltage control.
3. The cascade amplifier circuit is composed of Q104 and Q105

3.11 BOM Difference Table

1. With Different CRT

Location	Panasonic LR CRT .28 CRT (7133D)	Panasonic Normal CRT .28 CRT (7133D)	Chunghwa LR CRT .28 CRT (7133D)	Chunghwa Normal CRT .28 CRT (7133D)	Chunghwa Normal .39 CRT (7111D)
C330	22uF/160V	Omit	22uF/160V	Omit	Omit
D315	15Df4	Jumper	15DF4	Jumper	Jumper
R280	2.0K	2.0K	1.8K	1.8K	2.4K
L302 Linear Coil	10uH	10uH	10uH	10uH	6uH
C314	0.0039uF/1.6 KV	0.0039uF/1.6 KV	0.0039uF/1.6 KV	0.0039uF/1.6 KV	0.0047uF/1.6 KV
R328	39K	12K	47K	22K	

2. Main Board

Location	LR CRT	Normal CRT
TP5	W.A. 1P BLK 1015 #18 400 (50.75401.011)	Omit
TP6	W.A.1P BLK 1618 #24 500 (50.75401.001)	Omit

3. DC Level

Coil Degaussing	19.90008.001	19.90015.001
Clip CAB A1100 7056	34.75605.001	Omit

3.12 Switching Power Supply

The main purpose of the EMI filter is to reduce the conducted noise. There are two major aspects of conducted interference to be considered: the differential mode conducted noise and the common mode conducted noise.
The EMI filter consists of L601, C602, L602, C603, C604 and L603.

The input rectifier/filter converts the 47 - 63 Hz AC line voltage to a DC voltage.

The input rectifiers are configured as a full wave bridge.

Input CKT is universal such that input voltage is from 90Vac to 264Vac and input frequency is from 47Hz to 63Hz. When the input voltage equals 90Vac, input current equals 0.9A or input voltage equals 264Vac, input current equals 0.5A.

The switching device of power supply is MOSFET 2sk793. The maximum rating is Ids = 5A. Vds = 850V and PWM current mode controller is UC3842. The pin functions are as follows:

Pin Number	Function	Pin Number	Function
1	Error amplifier output	5	GND
2	Negative feedback	6	Output
3	Current sensor	7	Vcc
4	Sawtooth ramp oscillator	8	Vref = 5V

The 711D/7133D power supply output is as follows:

6.3V 0.7A
12V: 0.7A
90V: 0.55A (Fh -= 31.4KHz)
113V: 0.4A (Fh = 37KHz)

The power supply adds a snubber CKT to reduce the spike of MOSFET Vds which results from the leakage of the transformer.

The snubber CKT consists of R605, C606, C607, D606.

The pin 6 output of UC3842 drives the gate of power MOS 2SK793, so the transformer primary winding comes into oscillatory square wave so as to store and transfer energy.

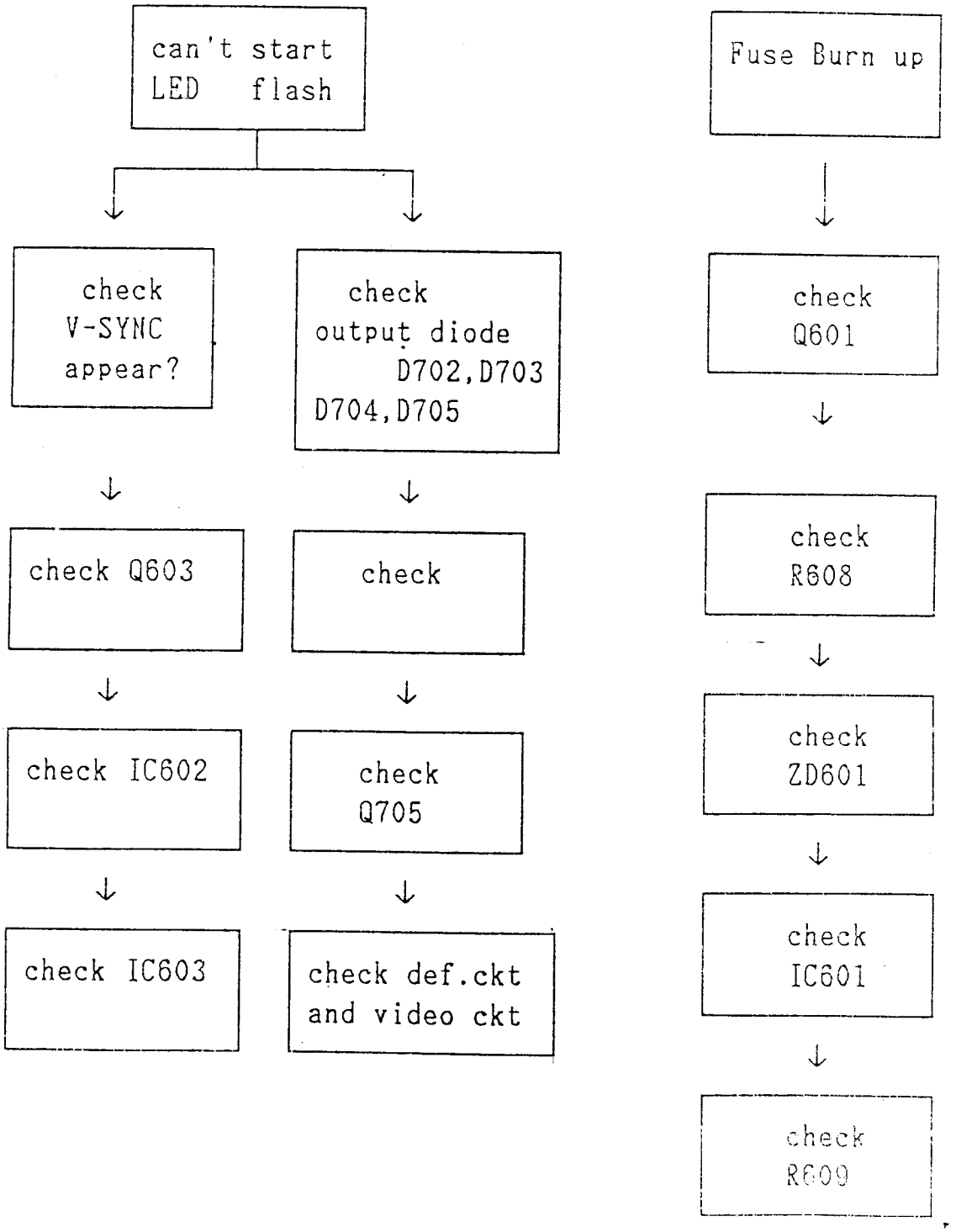
When MOSFET 2SK793 turns off, the secondary output diodes turn on and the secondary winding flux energy transfer to capacitor to supply load. Secondary connects the L.C. low pass filter in order to reduce ripple and noise.

There is power saving function in the switching power supply. When V-Sync appears, it is detected by an optocoupler through LM393 comparator, then UC3842 during normal operation. The monitor works at ON mode.

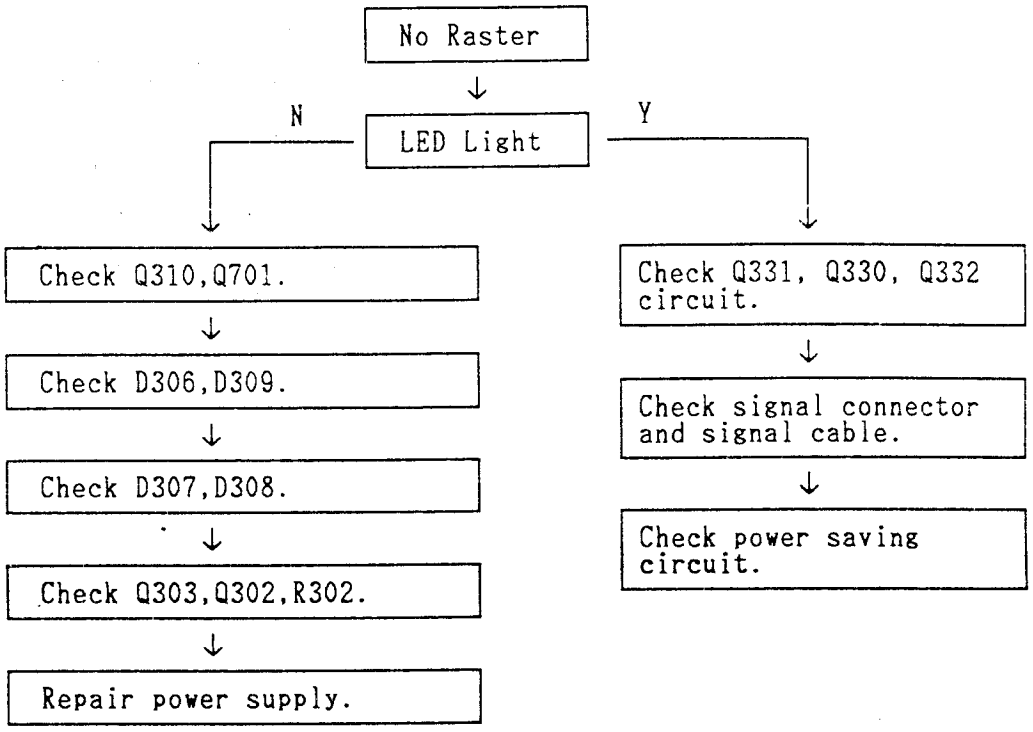
When V-Sync disappears, or V-Sync frequency is less than 10Hz, the UC3842 shuts down and the power supply does not output, then the monitor works at suspend mode (off mode) and the power loses are less than 5W to achieve power saving function.

3.13 Troubleshooting

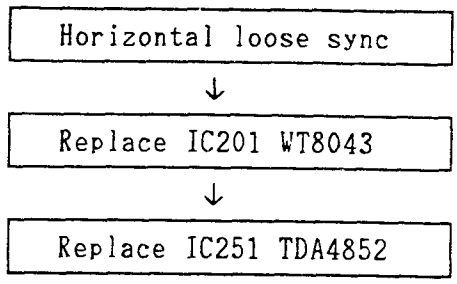
3.13.1 SPS Troubleshooting



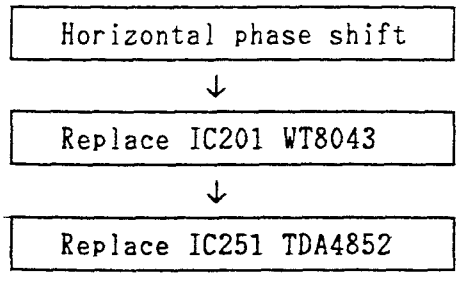
3.13.2 No Raster



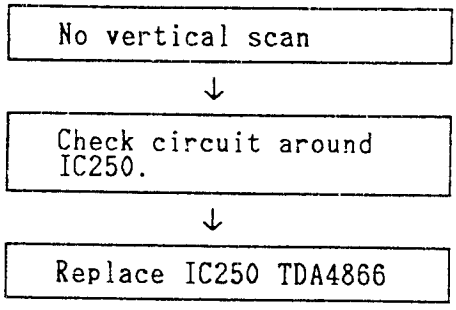
3.13.3 Horizontal Loose Sync



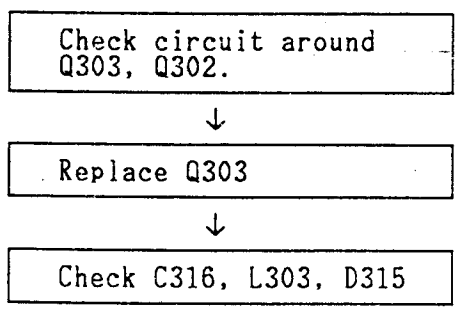
3.13.4 Horizontal Phase Shift



3.13.5 No Vertical Scan



3.13.6 Horizontal Size and Pincushion Poor



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Spare Parts List

Item	PART No.	Description	Location
1	55.75801.031	Main Board 7133DL (For Chung Hwa Tube)	
2	55.75801.011	Main Board 7133DL	
3	55.75802.001	Video Board 7133D/7133DL	
4	55.75803.001	LED Board 7133D (Acer)	
5	39.75301.091	CAS U NORYL PX1005 002 7033D	
6	41.75301.091	Bezel NORYL 002 7033D (LR)	
7	44.73302.883	CTN AB 477*488*398 ORI 7033D	
8	47.75318.001	Cushion Right EPS 7033D	
9	47.75319.001	Cushion Left EPS 7033D	
10	60.73101.002	Assy Base 7031/7033	
11	19.90008.001	Coil Degaussing 7031	
12	19.70026.001	Transformer FBT 7133D	T302
13	17.60018.00A	Therm 100/18 PTC 18*13*18	TR602
14	17.60021.8R0	Therm 8 NTC 11.5D	TR601
15	06.00422.010	XTOR BF422 TO-92 NPN P RT	Q707
16	06.00423.010	XTOR BF423 TO-92 PNP P RT	Q332,706
17	06.00517.010	Transistor BC517 TO-92 NPN P	Q253
18	06.00649.01A	XTOR 2SB49A C TO-126 PNP P	Q705
19	06.00669.01A	XTOR 2SD669A C TO-126 NPN P	Q303
20	06.00733.011	XTOR 2SA733 P TO-92 PNP P R	Q302,602,317,252,603,318
21	06.00793.020	FET MOS 2SK793 NC TO-3P	Q601
22	06.00945.010	XTOR H945 P TO-92 NPN P RT	Q201,205,207,250,251, Q301,320,330,311
23	06.01213.01A	XTOR 2SC1213A C TO-92 NPN P RT	Q315
24	06.02508.010	XTOR BU2508AF SOT199 NPN P	Q310
25	06.1R0A0.122	DIODE FAST UF4007 1KV 1A	D606
26	06.1R005.030	DIODE REC 1N4001 50V 1A D0-41	D612
27	06.1R010.120	DIODE FAST RGP10B 100V 1A	D304
28	06.1R020.121	DIODE FAST RGP10D 200V 1A	D605,601
29	06.1R040.120	DIODE FAST RGP10G 400V 1A	D303
30	06.1R540.121	DIODE FAST 15DF4 400V 1.5A	D315
31	06.12R03.070	DIODE ZEN 12V 1/2W DO-35 5%	ZD250
32	06.13R03.070	DIODE ZEN 13V 1W D0-41 5%	ZD603
33	06.18r03.070	DIODE ZEN 18V 1/2W D0-35 5%	ZD601
34	06.2R0A0.120	DIODE FAST 2NU41 1KV 2A	D702,703
35	06.2R010.120	DIODE FAST RGP20B 100V 2A	D706,707
36	06.2R060.030	DIODE REC 20D6 600V 2A D0-41	D601-604
37	06.3R010.122	DIODE FAST EGP30B 100V 3A	D704,705
38	06.3R060.123	DIODE FAST BYM36C 600V 3A	D308
39	06.5R0F0.120	DIODE FAST 5THZ52 1.KV 5A	D307
40	06.02369.011	XTOR PH2369 TO-92 NPN P R	Q104,106,108

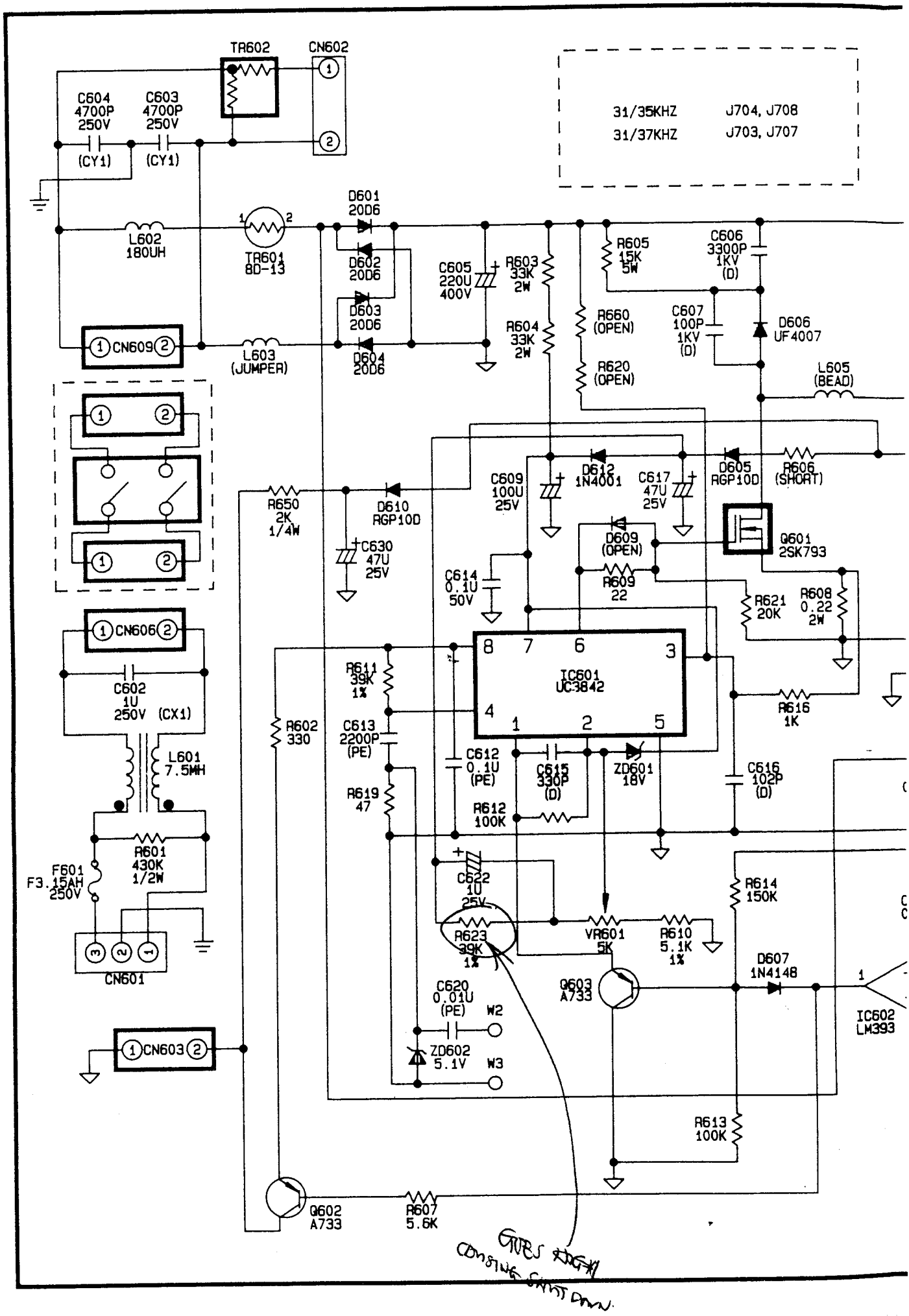
Item	PART No.	Description	Location
41	06.03611.010	Transistor 2SC3611 TO-126B NPN	Q105,107,109
42	06.1SS83.040	DIODE SW 1SS83 300V 0.2A D0-35	D102-104
43	04.00393.020	IC V.C. LM393 DIP 8P	IC602
44	04.03842.040	IC V.R. UC3842 DIP 8P	IC601
45	04.04852.070	IC H/V DEF CTRL TDA4852 DIP 20P	IC251
46	04.04866.070	IC VERT DEF DRV TDA4866 SIP 9P	IC250
47	04.08043.070	IC SYN SIG DSCRM WT8043 DIP 20P	IC201
48	04.01203.010	IC RGB Video AMP LM1203 DIP	IC101
49	05.0082A.010	IC OPTO CNX82A DIP 6P	IC603
50	26.13151.112	FUSE 3.15A 250V ST20 F/H SEMKO	F601

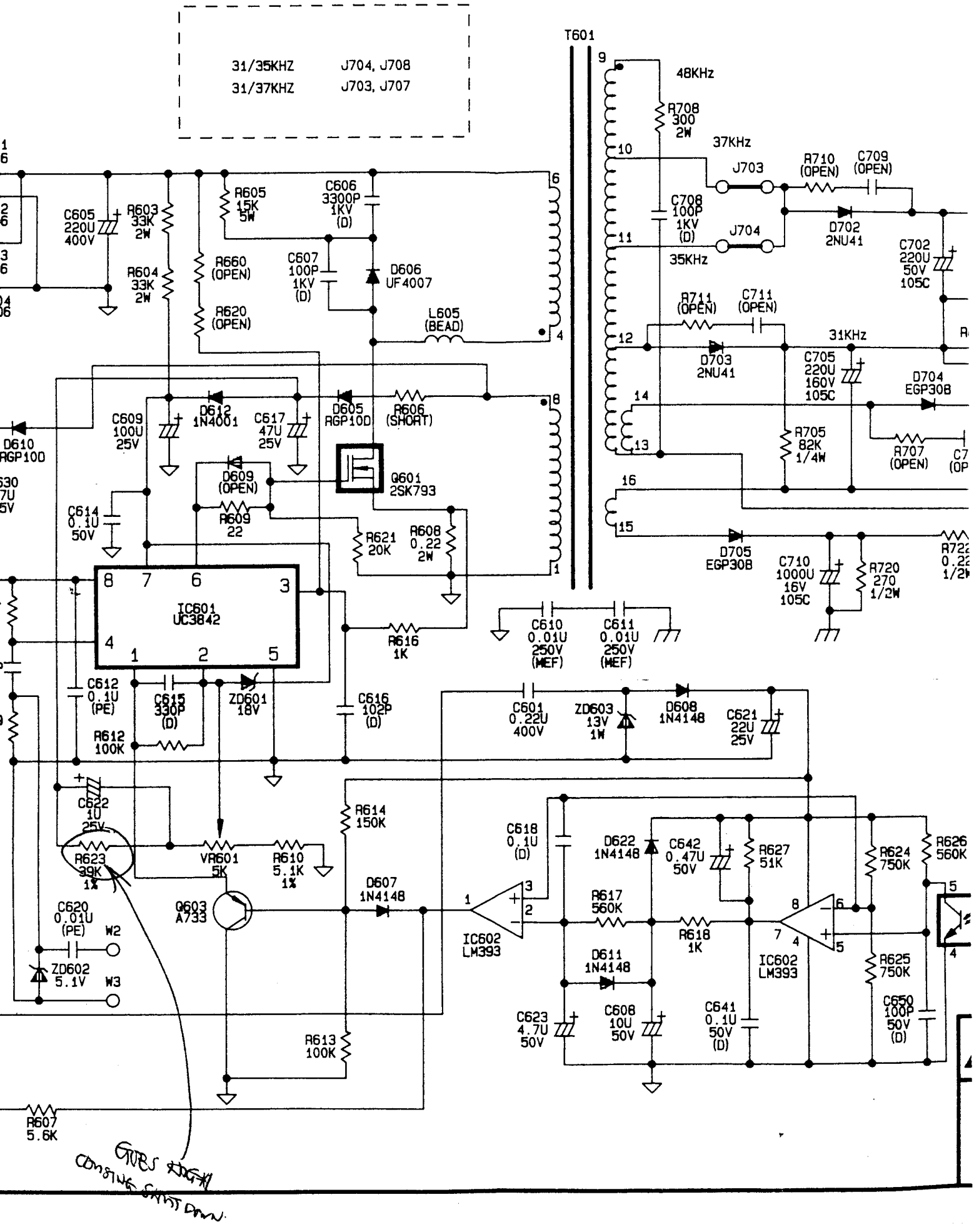
CAUTION: *For continued protection against risk of fire, replace only with Schurter AG, Type SP, rated 3.15A, 250V.*

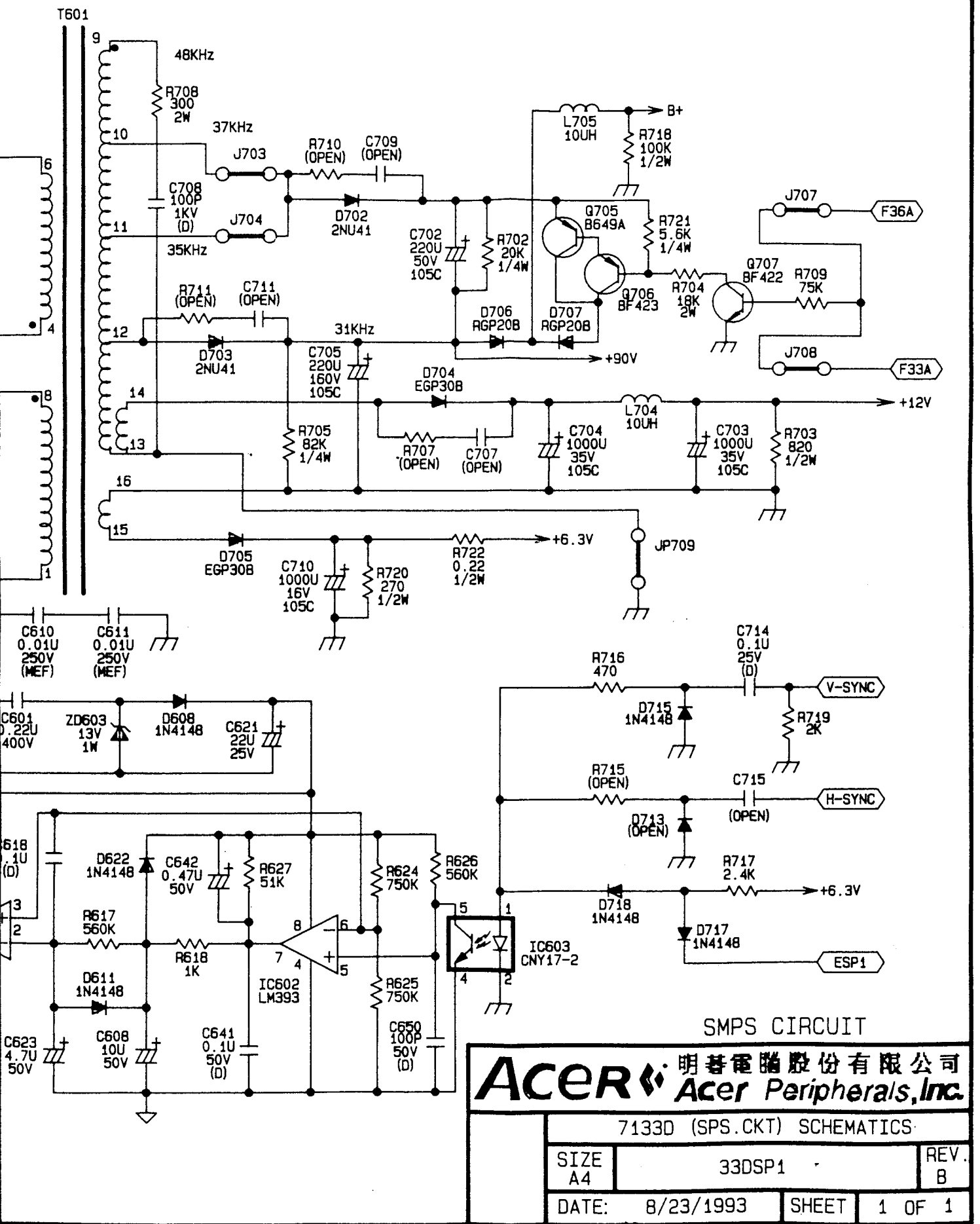
For continued protection against risk of fire, replace only with Littelfuse Inc. Type 2163.15, rated 3.15A, 250V.

Chapter 5

Layout and Circuit Diagrams


TR602
CN602
C604 4700P 250V (CY1)
C603 4700P 250V (CY1)
L602 180UH
TR601 8D-13
D601 20D6
D602 20D6
D603 20D6
D604 20D6
C605 220U 400V
R603 33K 2W
R604 33K 2W
R605 15K 5W
C606 3300P 1KV (D)
R660 (OPEN)
R620 (OPEN)
C607 100P 1KV (D)
D606 UF4007
L605 (BEAD)
CN609
L603 (JUMPER)
31/35KHZ J704, J708
31/37KHZ J703, J707
R650 2K 1/4W
D610 RGP10D
C630 47U 25V
C609 100U 25V
D612 1N4001
C617 47U 25V
D605 RGP10D
R606 (SHORT)
Q601 2SK793
D609 (OPEN)
R609 22
C614 0.1U 50V
R621 20K
R608 0.22 2W
CN606
C602 1U 250V (CX1)
L601 7.5MH
IC601 UC3842
R611 39K 1%
R602 330
C613 2200P (PE)
R619 47
C612 0.1U (PE)
C615 330P (D)
ZD601 18V
R612 100K
C616 102P (D)
R616 1K
R601 430K 1/2W
F601 F3.15AH 250V
CN601
C622 1U 25V
R623 39K 1%
VR601 5K
R610 5.1K 1%
R614 150K
D607 1N4148
Q603 A733
IC602 LM393
C620 0.01U (PE)
W2
ZD602 5.1V
W3
CN603
R613 100K
Q602 A733
R607 5.6K
GIVES HIGH
COMING START DOWN.

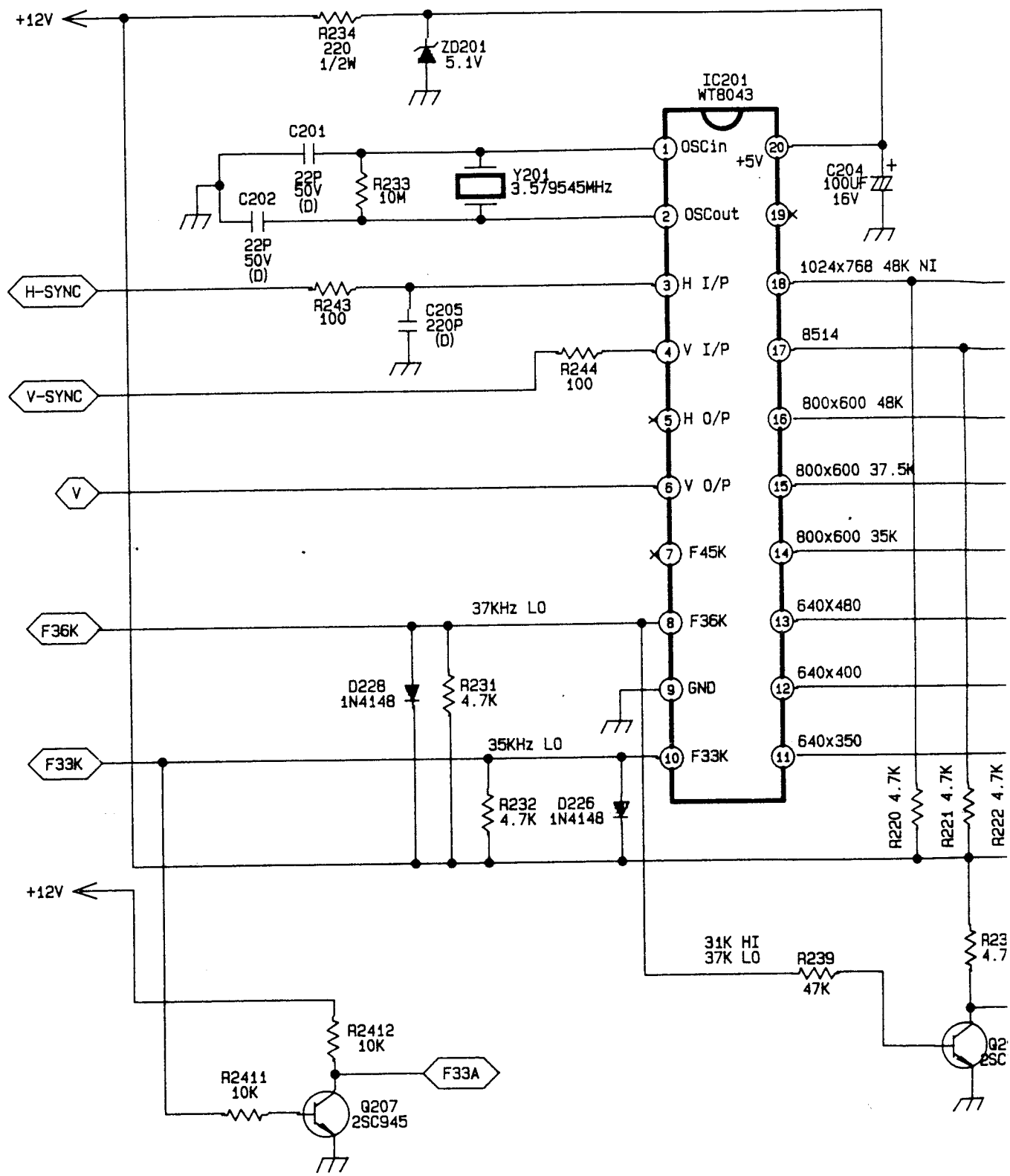

31/35KHZ J704, J708
31/37KHZ J703, J707
T601
48KHz
37KHz
35KHz
31KHz
J703
J704
R708 300 2W
R710 (OPEN)
C709 (OPEN)
C708 100P 1KV (D)
D702 2NU41
C702 220U 50V 105C
R711 (OPEN)
C711 (OPEN)
D703 2NU41
C705 220U 160V 105C
D704 EGP308
R705 82K 1/4W
R707 (OPEN)
D705 EGP308
C710 1000U 16V 105C
R720 270 1/2W
C605 220U 400V
R603 33K 2W
R604 33K 2W
R605 15K 5W
C606 3300P 1KV (D)
R660 (OPEN)
R620 (OPEN)
C607 100P 1KV (D)
D606 UF4007
L605 (BEAD)
D610 RGP10D
C609 100U 25V
D612 1N4001
C617 47U 25V
D605 RGP10D
R606 (SHORT)
D609 (OPEN)
Q601 2SK793
R609 22
C614 0.1U 50V
R621 20K
R608 0.22 2W
IC601 UC3842
R616 1K
C610 0.01U 250V (MEF)
C611 0.01U 250V (MEF)
C612 0.1U (PE)
C615 330P (D)
ZD601 18V
C616 102P (D)
R612 100K
C601 0.22U 400V
ZD603 13V 1W
D608 1N4148
C621 22U 25V
C622 1U 25V
R623 39K 1%
VR601 5K
R610 5.1K 1%
R614 150K
C618 0.1U (D)
D622 1N4148
C642 0.47U 50V
R627 51K
R624 750K
R626 560K
C620 0.01U (PE)
W2
W3
ZD602 5.1V
Q603 A733
D607 1N4148
IC602 LM393
R617 560K
R618 1K
D611 1N4148
IC602 LM393
R625 750K
C623 4.7U 50V
C608 10U 50V
C641 0.1U 50V (D)
C650 100P 50V (D)
R613 100K
R607 5.6K
GIVES 8VDC
CONTINUE START DOWN.



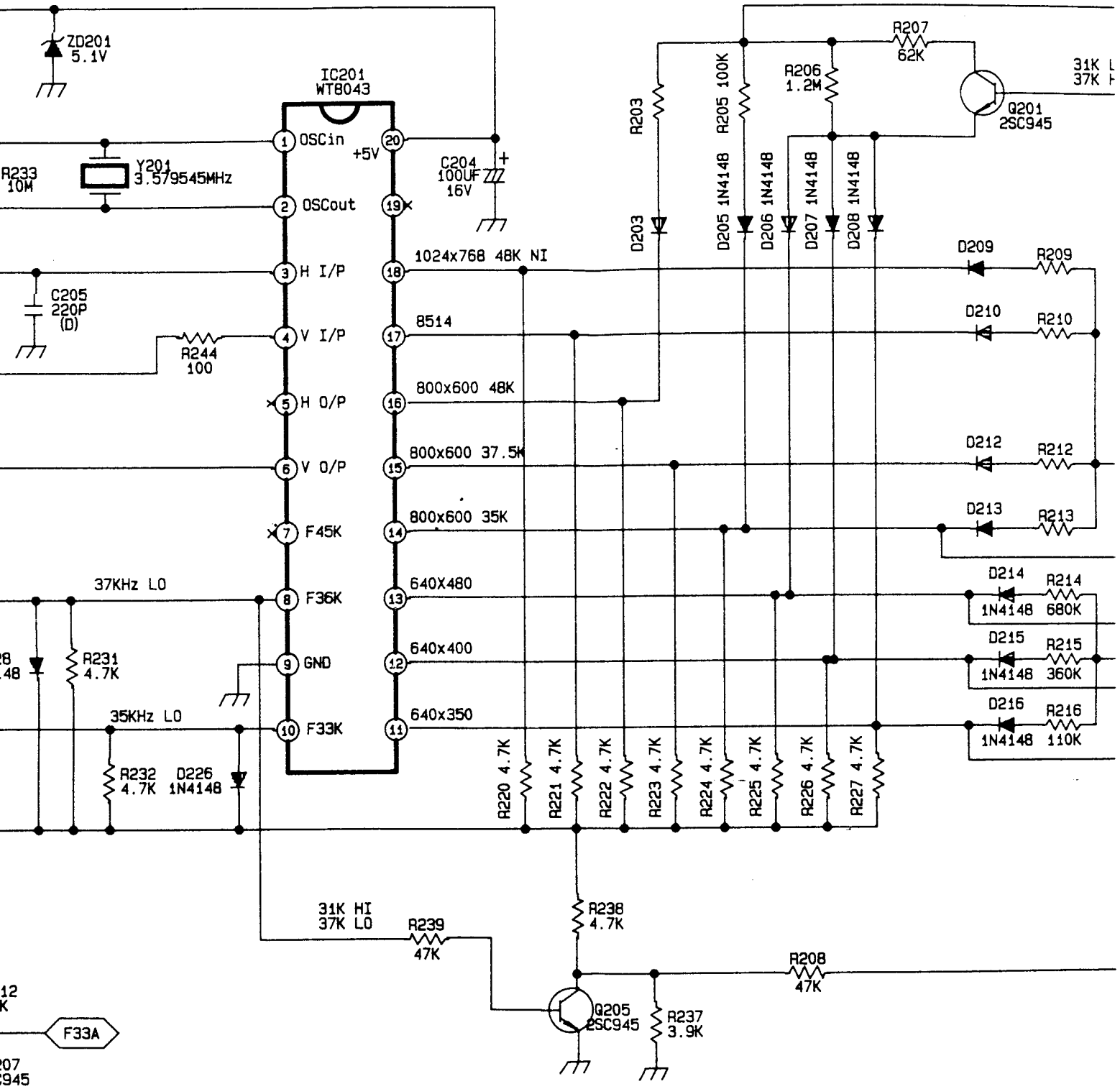
SMPS CIRCUIT

ACER 明碁電腦股份有限公司 Acer Peripherals, Inc.

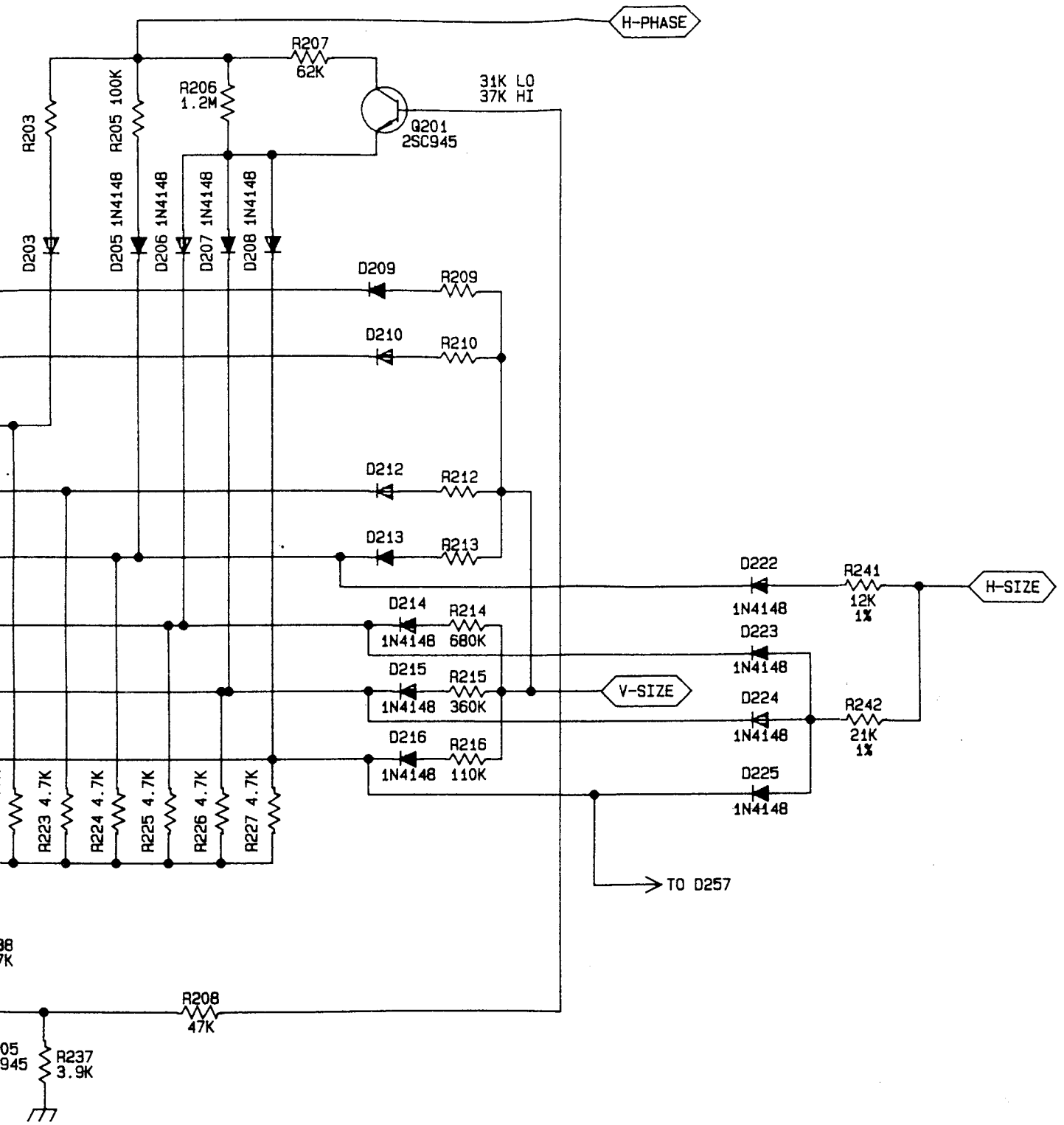
7133D (SPS.CKT) SCHEMATICS		
SIZE A4	33DSP1	REV. B
DATE: 8/23/1993	SHEET	1 OF 1



Hs	F33K	F36K	F45K
Hs < 33KHz	1	1	1
33KHz < Hs < 36KHz	0	1	1
36KHz < Hs < 45KHz	0	0	1
45KHz < Hs	0	0	0

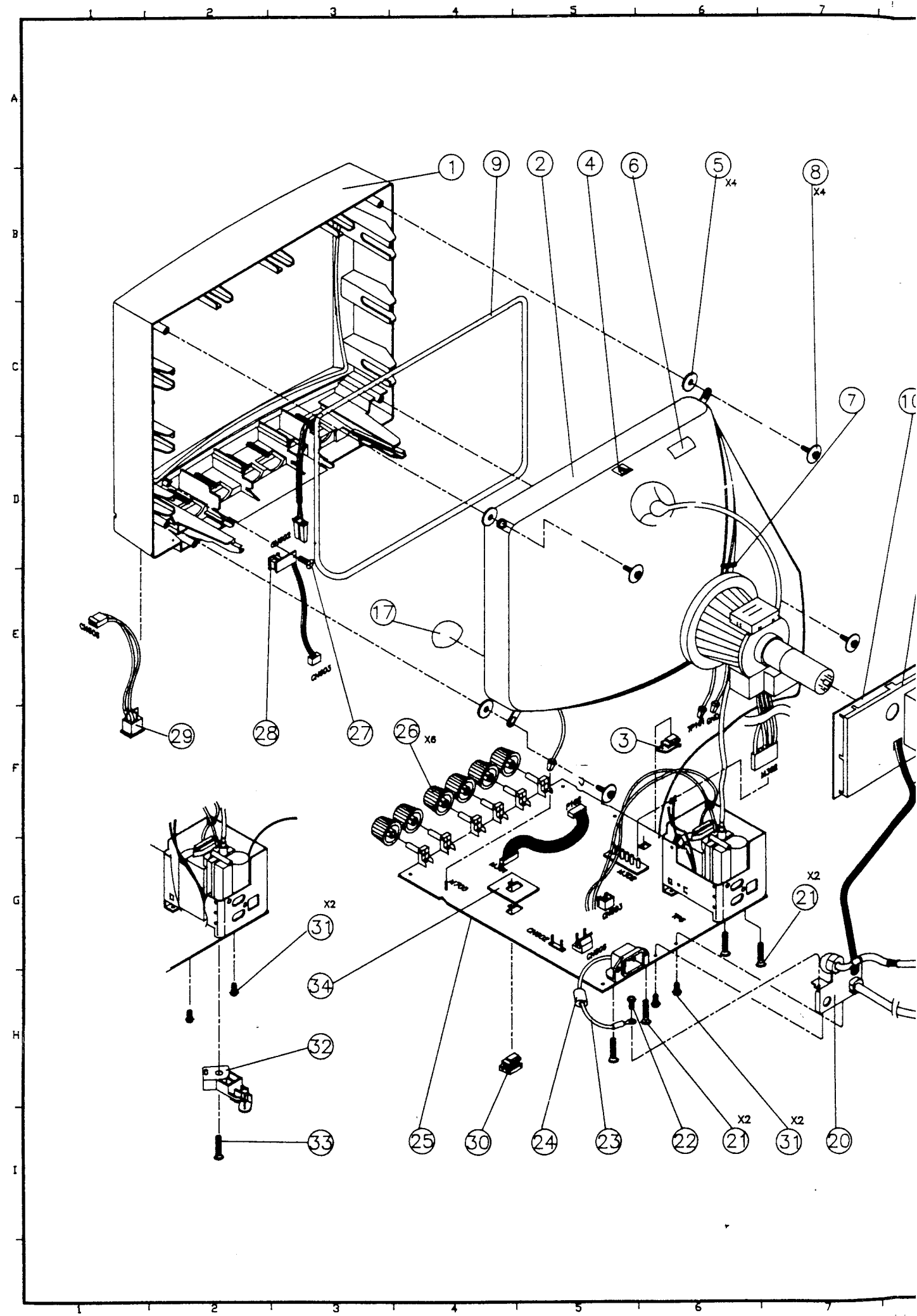


Hs	F33K	F36K	F45K
Hs < 33KHz	1	1	1
33KHz < Hs < 36KHz	0	1	1
36KHz < Hs < 45KHz	0	0	1
45KHz < Hs	0	0	0



MODE CONTROL CIRCUIT

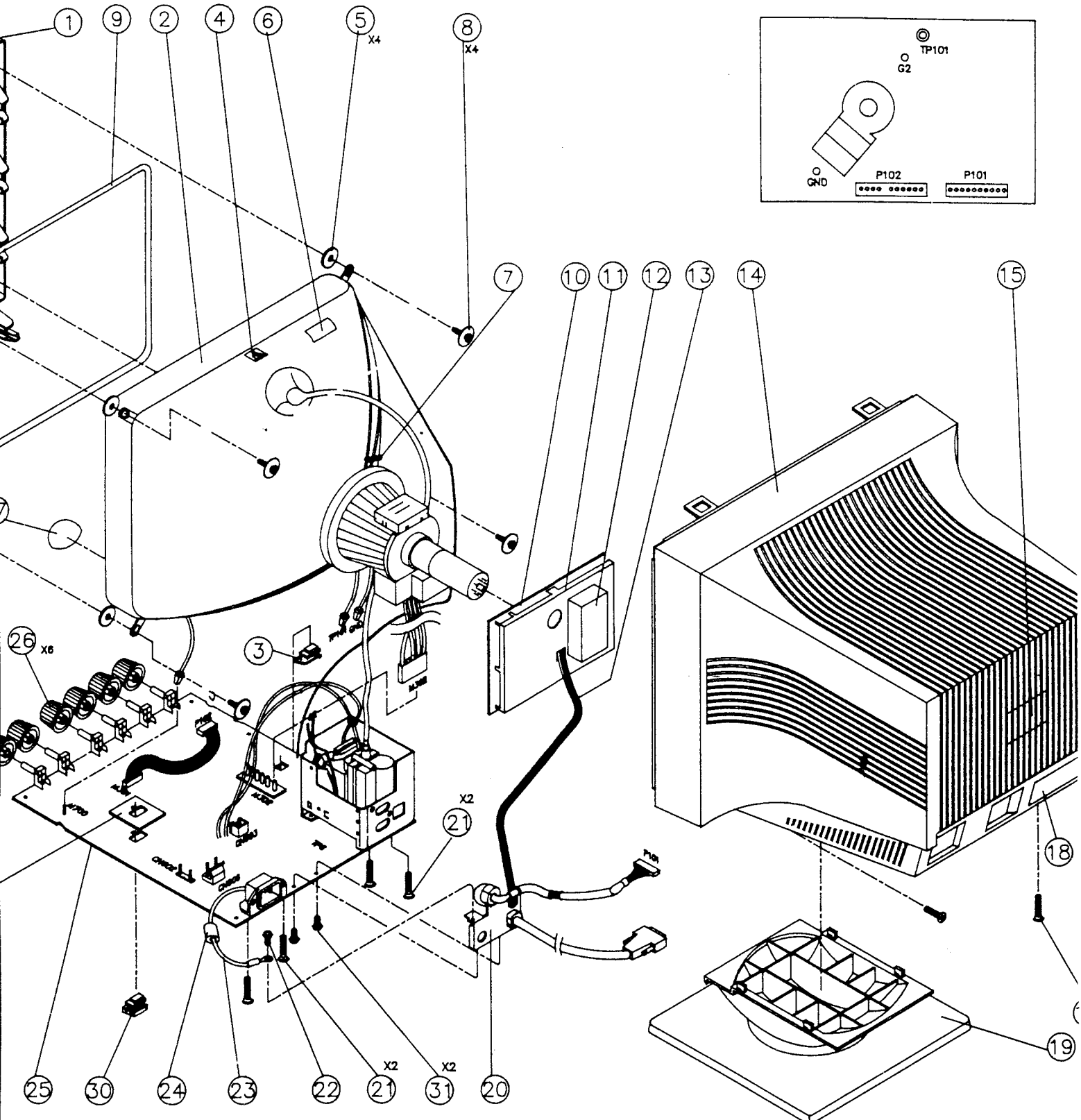
ACER 明碁電腦股份有限公司 Acer Peripherals,Inc.		
	7133D (MAIN.CKT) SCHEMATICS	
SIZE A4	33DMN1	REV. B
DATE: 8/23/1993	SHEET	1 OF 4

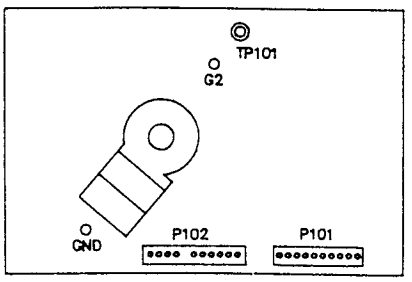

1
9
2
4
6
5 X4
8 X4
7
10
17
29
28
27
26 X6
3
X2
31
34
32
33
25
30
24
23
22
21
31
20
X2
21
X2

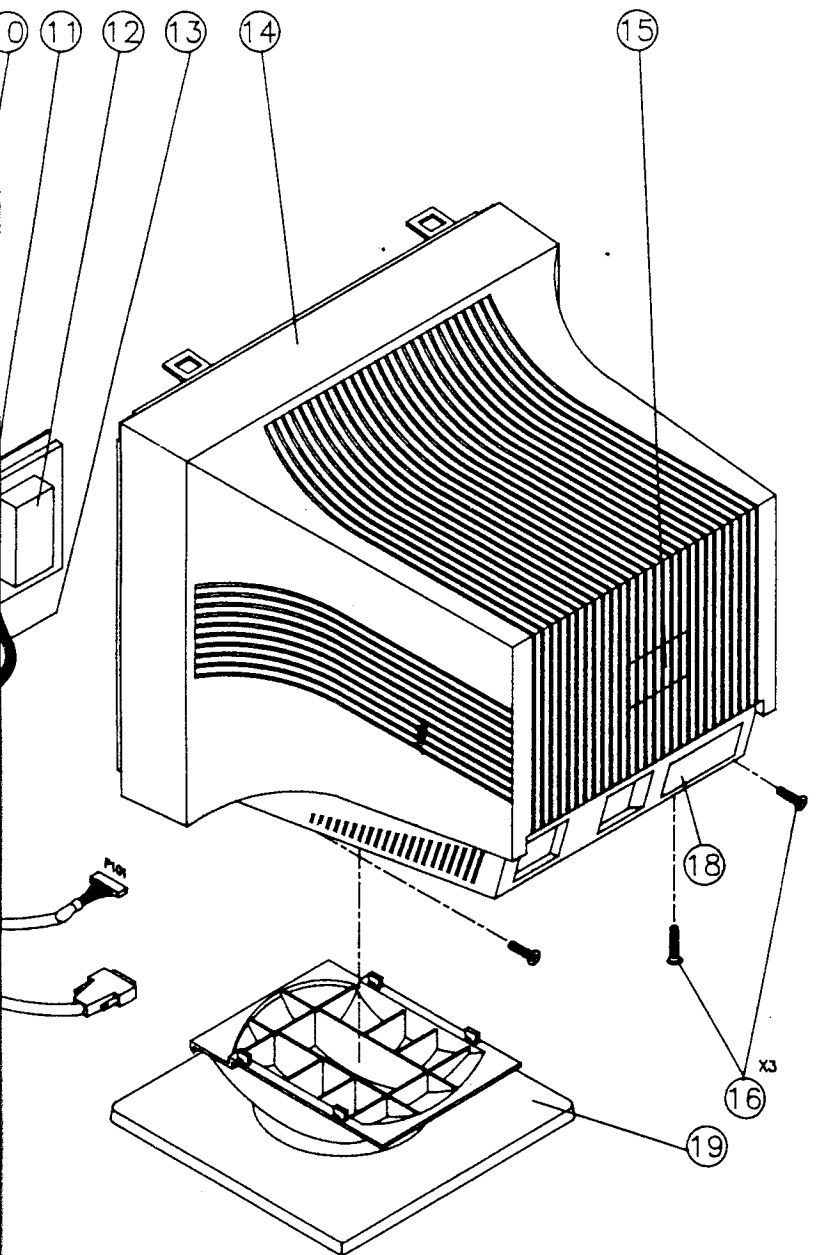
3.7 Spot Killer and Blanking Circuit 3-8
3.8 Power Saving 3-9
3.9 ABL (Auto Brightness Limit) Circuit 3-9
3.10 Video Amplifier Circuit 3-9
3.11 BOM Difference Table 3-10
3.12 Switching Power Supply 3-11
3.13 Troubleshooting 3-12
3.13.1 SPS Troubleshooting 3-12
3.13.2 No Raster 3-13
3.13.3 Horizontal Loose Sync 3-14
3.13.4 Horizontal Phase Shift 3-14
3.13.5 No Vertical Scan 3-15
3.13.6 Horizontal Size and Pincushion Poor 3-15

4 Spare Parts List

5 Layout and Circuit Diagrams


TP101
G2
GND
P102
P101
1
9
2
4
6
5
X4
8
X4
7
10
11
12
13
14
15
26
X6
3
X2
21
18
19
25
30
24
23
22
21
X2
31
X2
20





ITEM	PART NO	DESCRIPTION	QTY
1	41.75301.XXX	BEZEL ACER	1
	41.75302.XXX	BEZEL OEM	1
	41.75303.XXX	BEZEL KEYPOINT	1
2	56.05753.XXX	CRT 14" 7133D	1
	56.05733.XXX	CRT 14" 7134T	1
	56.05711.XXX	CRT 14" 7111D	1
3	42.75301.001	SPACER PCB NYLON 7033D	1
4	45.71502.001	LBL WARR HV ART 7016	1
5	47.73101.001	SPACER CRT RUB 7031	1
6	45.75301.001	LBL HV WARN ART 7033D	4
7	50.75401.021	W.A. 4P(CRT GND) BRAID 465MM	1
8	86.0008.281	SCRW TAP WASHER M5*25L C-Zn	4
9	19.90008.001	COIL DEGAUSSING	4
10	55.75402.001	VIDEO BD 7134T	1
11	34.75801.001	SHIELD CRT BD SPTE 7133D	1
12	47.71509.001	SPONGE 80*60*30 7015	1
13	50.60311.011	W.A. 1P(GND) BRAID 115MM	1
14	39.75301.XXX	CASE U	1
15	40.75301.XXX	NAME PLATE	1
16	86.WA526.160	SCRW TAP CAP M4*16L NI	3
17	40.75406.001	EPA LBL FOR MONITOR	3
18	40.77601.001	LBL SPEC POLY	1
19	60.73101.XXX	ASS'Y BASE 008	1
20	60.75802.XXX	ASS'Y REAR BKT	1
21	86.WA426.120	SCRW TAP PAN M4*12L Zn-[illegible]	4
22	86.00010.161	SCRW TAP TRS W/EXT M4*8L	1
23	50.61007.003	W.A. 1P(GND) 1015 #15 [illegible]MM	1
24	25.70044.001	CORE D17.5*28.5*D8.5	1
25	55.75401.XXX	MAIN BOARD 7134T	1
	55.75801.XXX	MAIN BOARD 7133D	1
	55.75901.XXX	MAIN BOARD 7111D	1
26	42.75302.XXX	KNOB	6
27	86.YA224.8R0	SCRW TAP TRS M3*8L Zn	1
28	55.75803.001	LED DBD 7133D	1
29	60.75803.001	ASS'Y SWITCH ROCK I/O 7133D	1
30	42.75802.001	SPACER TRANS NYLON 7133D	1
31	86.YC224.8R0	SCRW TAP TRS M3*8L Zn	4
32	42.75801.001	SPACER FBT ABS 7133D	1
33	86.YA224.120	SCRW TAP TRS M3*12L Zn	1
34	48.75803.001	PCB PER TRANS IL 7133D	1

REV	DESCRIPTION	SIGN	DATE

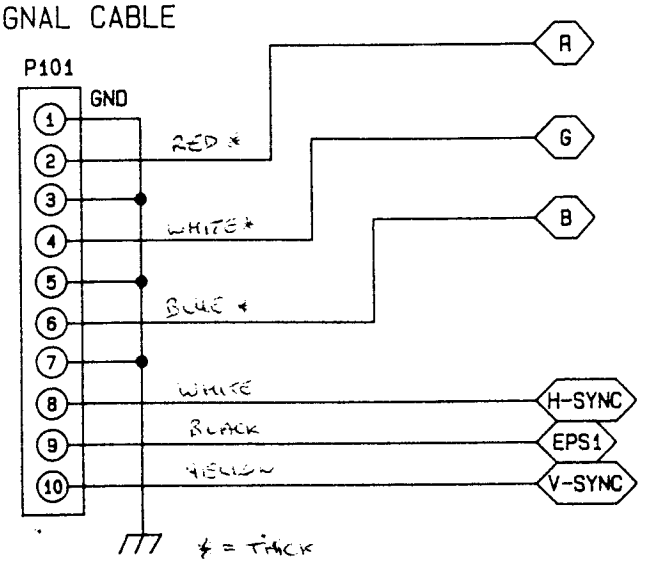
UNITS OR ASSEMBLY	7111D 7133D 7134T	NAME ASS'Y DWG.	
DRN		MATERIAL	
DSN		FINISH	QTY
CKD			
APPD		Acer Peripherals Inc.	

SCALE		DIM IN	M.M
UNLESS OTHERWISE NOTED			
1~6	±0.1	120~1000	±0.8
6~30	±0.2	1000~4000	±1.2
30~120	±0.3	4000~	±2.0
120~315	±0.5	ANG	±1/2°
ASSEMBLY SPEC.			
DRAWING NO.	57.75802.001.		

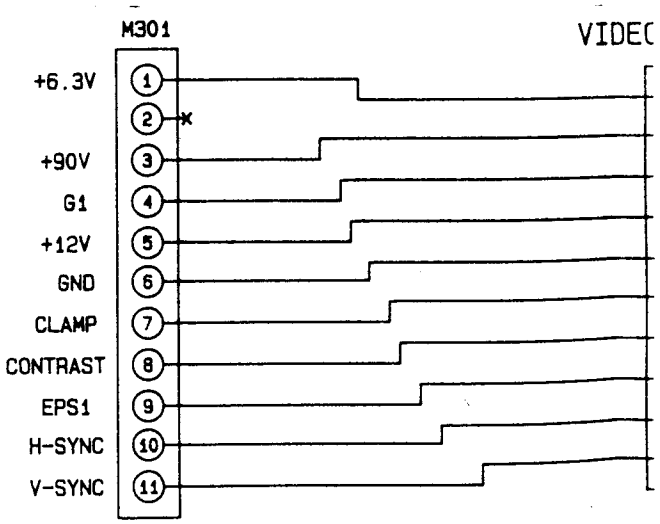
STOCK NO.

SHEET 1 OF 1

SIGNAL CABLE



MAIN BOARD



R

G

B

H-SYNC

EPS1

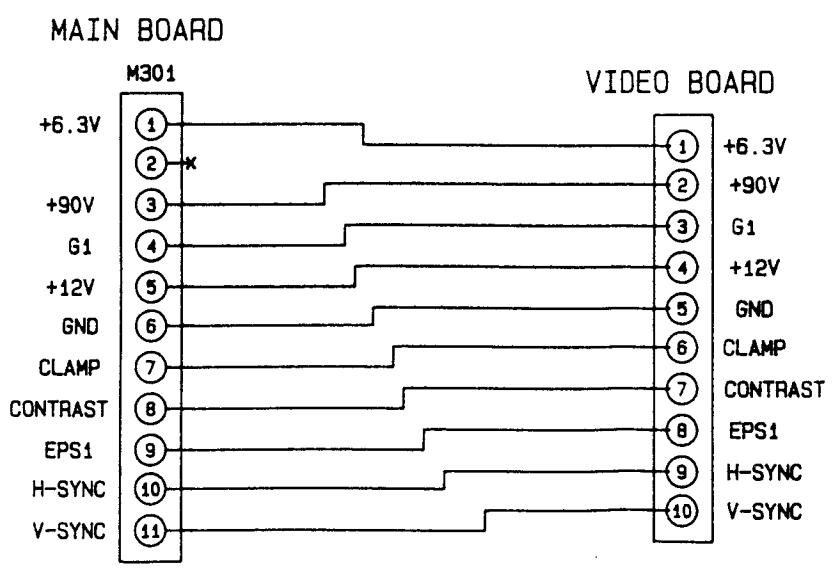
V-SYNC

H+

H-

V+

V-

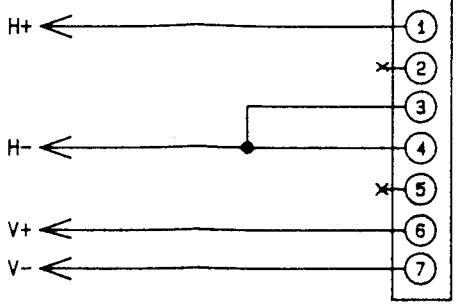


A

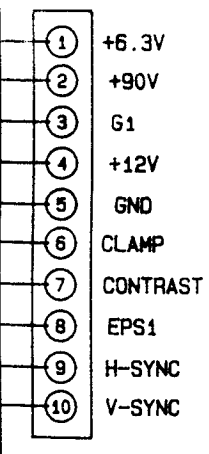
MAIN BOARD

YOKE

M302



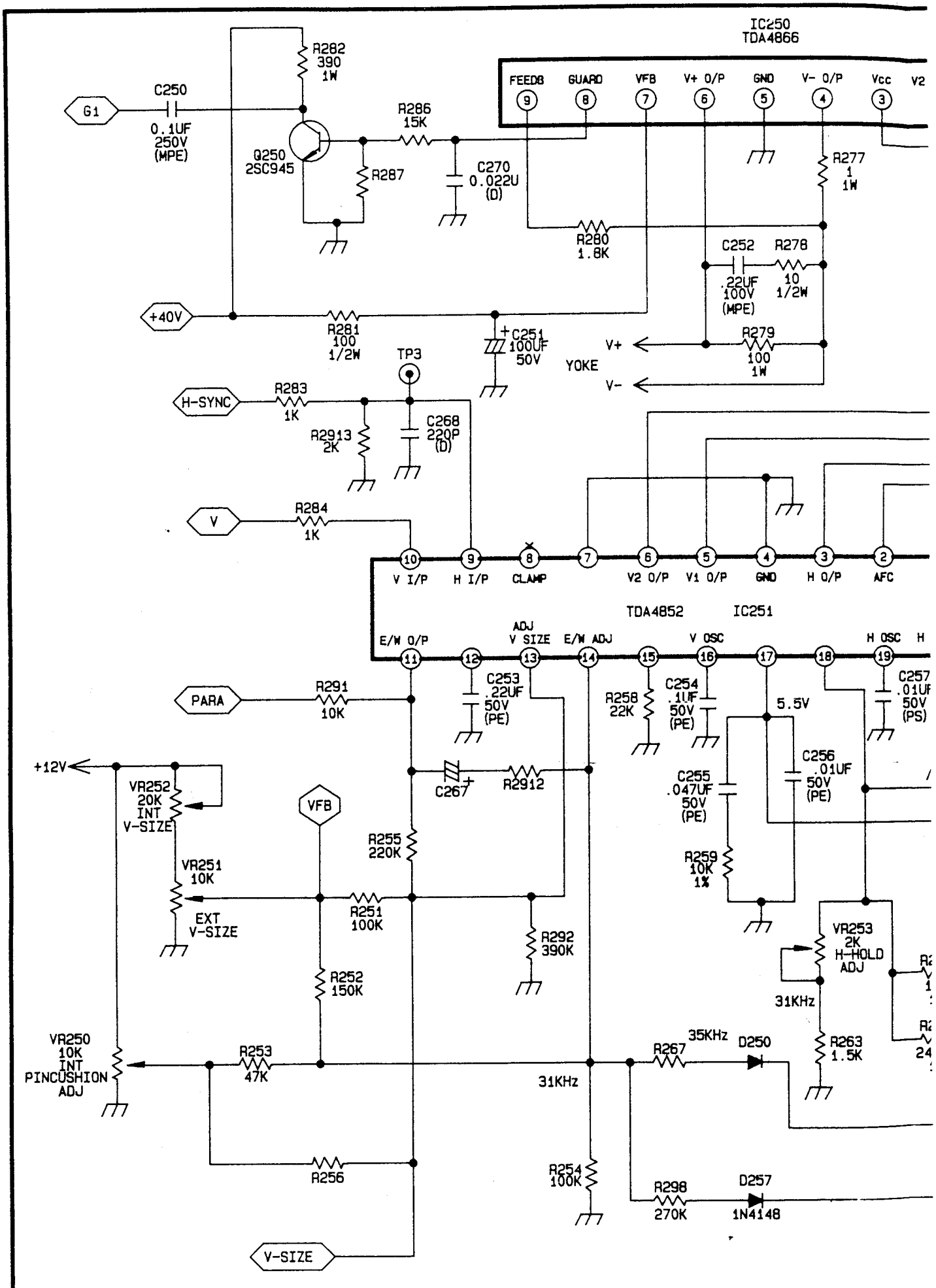
DEO BOARD

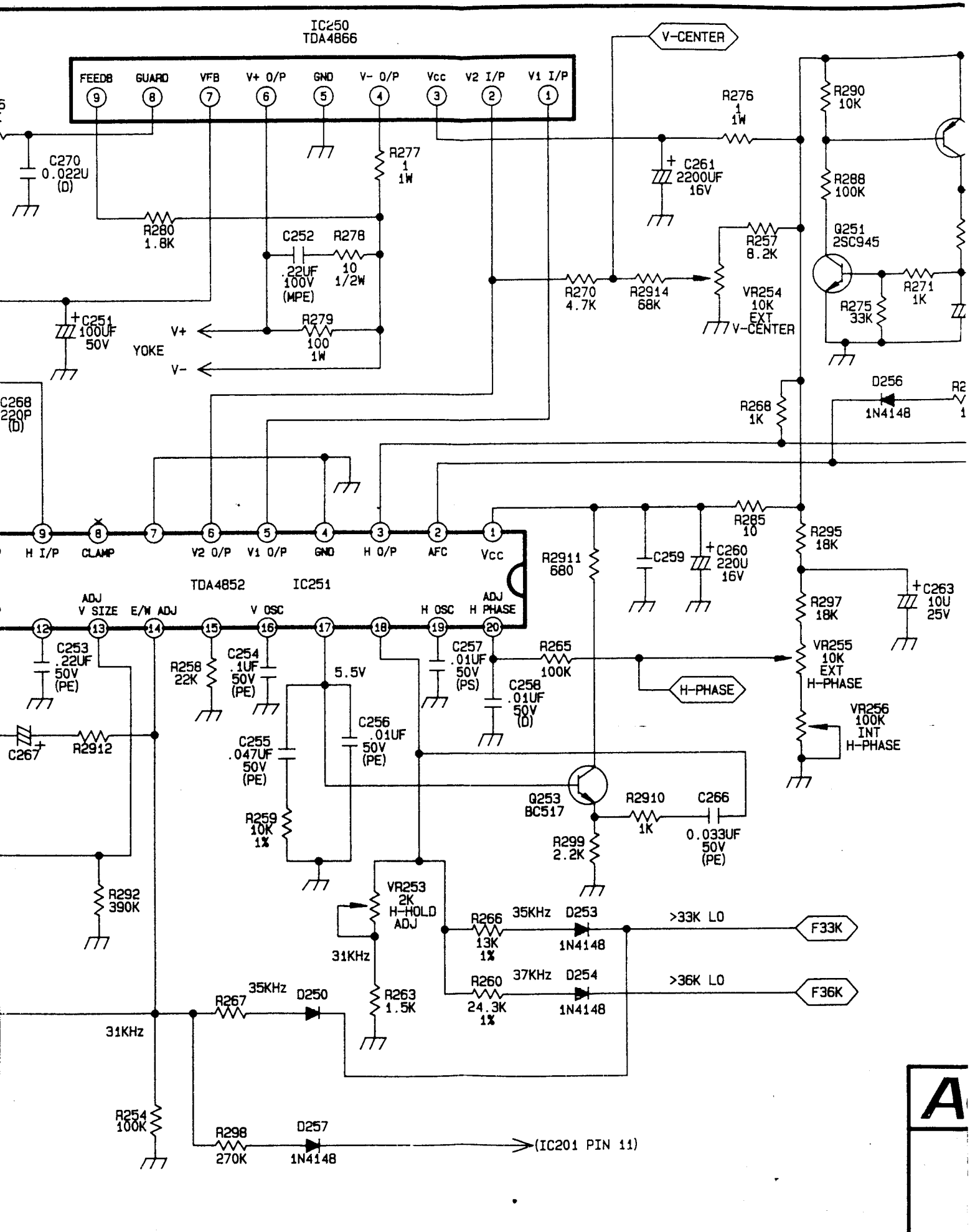


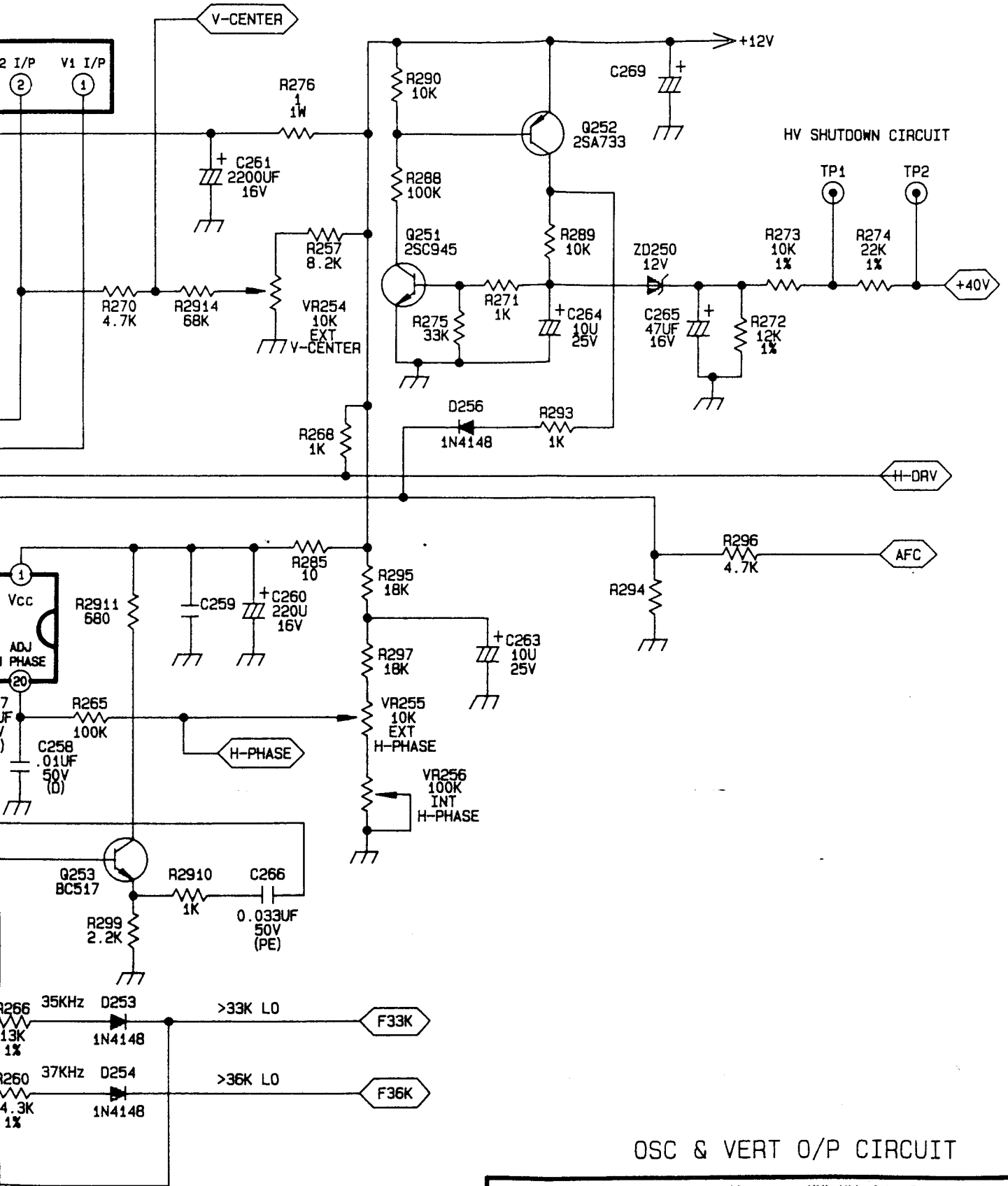
CONNECTOR CIRCUIT

Acer 明碁電腦股份有限公司 Acer Peripherals,Inc.

7133D (MAIN.CKT) SCHEMATICS			
SIZE A4	33DMN4		REV. B
DATE: 8/23/1993		SHEET	4 OF 4


IC250
TDA4866
FEEDB
GUARD
VFB
V+ O/P
GND
V- O/P
Vcc
G1
C250
0.1UF
250V
(MPE)
R282
390
1W
Q250
2SC945
R286
15K
R287
C270
0.022U
(D)
R280
1.8K
R277
1
1W
C252
.22UF
100V
(MPE)
R278
10
1/2W
+40V
R281
100
1/2W
+C251
100UF
50V
R279
100
1W
V+
YOKE
V-
TP3
H-SYNC
R283
1K
R2913
2K
C268
220P
(D)
V
R284
1K
V I/P
H I/P
CLAMP
V2 O/P
V1 O/P
GND
H O/P
AFC
TDA4852
IC251
E/W O/P
ADJ
V SIZE
E/W ADJ
V OSC
H OSC
PARA
R291
10K
C253
.22UF
50V
(PE)
R258
22K
C254
.1UF
50V
(PE)
5.5V
C257
.01UF
50V
(PS)
C256
.01UF
50V
(PE)
C255
.047UF
50V
(PE)
R259
10K
1%
+12V
VR252
20K
INT
V-SIZE
VFB
C267
R2912
R255
220K
VR251
10K
EXT
V-SIZE
R251
100K
R292
390K
R252
150K
VR253
2K
H-HOLD
ADJ
31KHz
VR250
10K
INT
PINCUSHION
ADJ
R253
47K
35KHz
R267
D250
R263
1.5K
31KHz
R256
R254
100K
R298
270K
D257
1N4148
V-SIZE

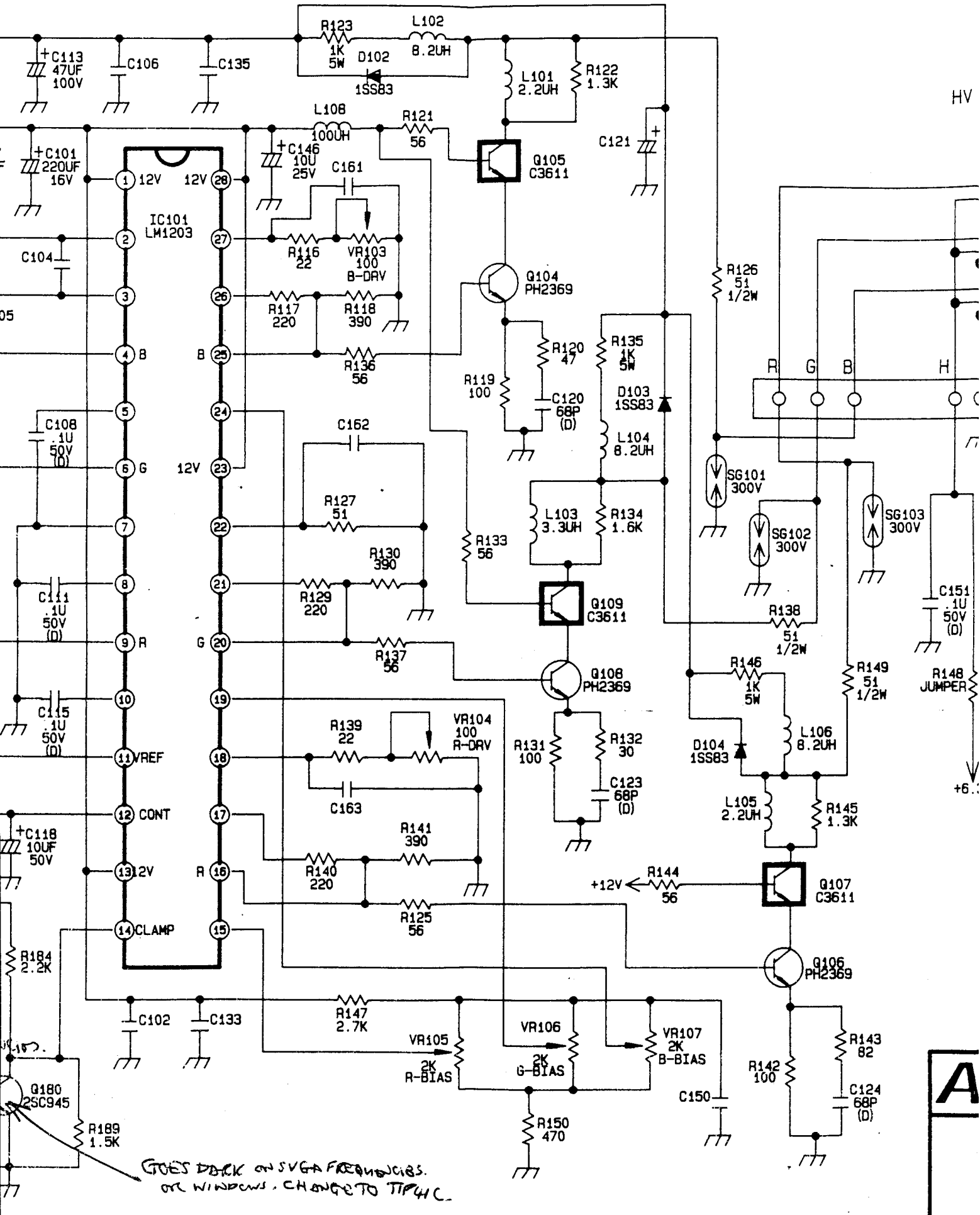

IC250
TDA4866
FEED8
GUARD
VFB
V+ O/P
GND
V- O/P
Vcc
V2 I/P
V1 I/P
V-CENTER
R276
1
1W
R290
10K
C270
0.022U
(D)
R277
1
1W
C261
2200UF
16V
R288
100K
R280
1.8K
C252
.22UF
100V
(MPE)
R278
10
1/2W
R257
8.2K
Q251
2SC945
R270
4.7K
R2914
68K
VR254
10K
EXT
V-CENTER
R271
1K
R275
33K
C251
100UF
50V
V+
YOKE
V-
R279
100
1W
D256
1N4148
R268
1K
C268
220P
(D)
R285
10
R295
18K
R2911
680
C259
C260
220U
16V
C263
10U
25V
R297
18K
TDA4852
IC251
H I/P
CLAMP
V2 O/P
V1 O/P
GND
H O/P
AFC
Vcc
ADJ
V SIZE
E/W ADJ
V OSC
H OSC
ADJ
H PHASE
C253
.22UF
50V
(PE)
R258
22K
C254
.1UF
50V
(PE)
5.5V
C257
.01UF
50V
(PS)
R265
100K
VR255
10K
EXT
H-PHASE
H-PHASE
C258
.01UF
50V
(D)
VR256
100K
INT
H-PHASE
C267
R2912
C255
.047UF
50V
(PE)
C256
.01UF
50V
(PE)
Q253
BC517
R2910
1K
C266
0.033UF
50V
(PE)
R259
10K
1%
R299
2.2K
R292
390K
VR253
2K
H-HOLD
ADJ
R266
13K
1%
35KHz
D253
1N4148
>33K LO
F33K
31KHz
R263
1.5K
R260
24.3K
1%
37KHz
D254
1N4148
>36K LO
F36K
R267
35KHz
D250
31KHz
R254
100K
R298
270K
D257
1N4148
(IC201 PIN 11)

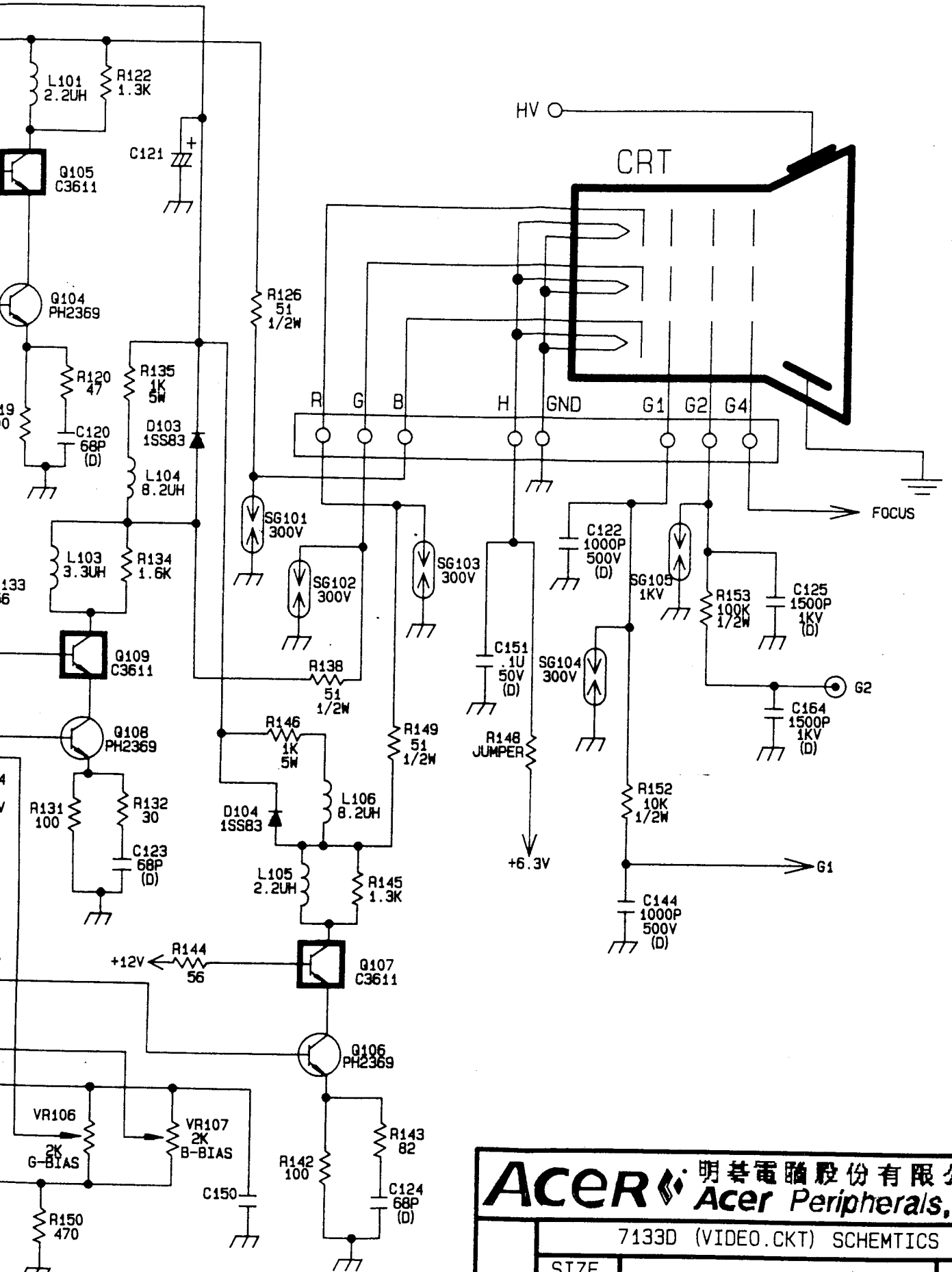


OSC & VERT O/P CIRCUIT

ACER 明碁電腦股份有限公司 Acer Peripherals,Inc.

7133D (MAIN.CKT) SCHEMATICS		
SIZE A4	33DMN2	REV. B
DATE: 8/23/1993	SHEET	2 OF 4


R123 1K 5W
L102 8.2UH
D102 1SS83
C113 47UF 100V
C106
C135
L101 2.2UH
R122 1.3K
L108 100UH
R121 56
C101 220UF 16V
C146 10U 25V
C161
Q105 C3611
C121
IC101 LM1203
1 12V
28 12V
2
27
R116 22
VR103 100 B-DRV
C104
3
26
R117 220
R118 390
Q104 PH2369
R126 51 1/2W
4 B
25 B
R136 56
R120 47
R135 1K 5W
R119 100
C120 68P (D)
D103 1SS83
R
G
B
H
5
24
C108 .1U 50V (D)
C162
L104 8.2UH
6 G
23 12V
SG101 300V
R127 51
L103 3.3UH
R134 1.6K
SG102 300V
SG103 300V
7
22
R133 56
R130 390
C151 .1U 50V (D)
8
21
C111 .1U 50V (D)
R129 220
Q109 C3611
R138 51 1/2W
9 R
20 G
R137 56
R146 1K 5W
R149 51 1/2W
R148 JUMPER
Q108 PH2369
10
19
C115 .1U 50V (D)
R139 22
VR104 100 R-DRV
R131 100
R132 30
11 VREF
18
C163
C123 68P (D)
D104 1SS83
L106 8.2UH
12 CONT
17
L105 2.2UH
R145 1.3K
C118 10UF 50V
R141 390
R140 220
13 12V
16 R
R144 56
+12V
Q107 C3611
R125 56
14 CLAMP
15
R184 2.2K
Q106 PH2369
C102
C133
R147 2.7K
VR105 2K R-BIAS
VR106 2K G-BIAS
VR107 2K B-BIAS
R143 82
R142 100
C124 68P (D)
C150
Q180 2SC945
R189 1.5K
R150 470
GOES BACK ON SVGA FREQUENCIES. OR WINDOWS. CHANGE TO TIP41C.
HV



ACER 明碁電腦股份有限公司
Acer Peripherals, Inc.

7133D (VIDEO.CKT) SCHEMTICS		
SIZE A4	7133DVD	REV. B
DATE: 8/23/1993	SHEET	1 OF 1

Introduction

This manual describes a low-cost high-performance 14-inch color, dual-frequency monitor. It is compatible with all IBM 8514 modes at 31.5-KHz and 35.5-KHz as well as the SVGA mode at 35.16-KHz.

It has the following features:

- energy-saving functions
- 0.28-mm trial pitch anti-glare CRT
- user controls are all located on the front panel

  - contrast
  - brightness
  - power On/Off
  - H-size
  - H-phase
  - V-size
  - V-center

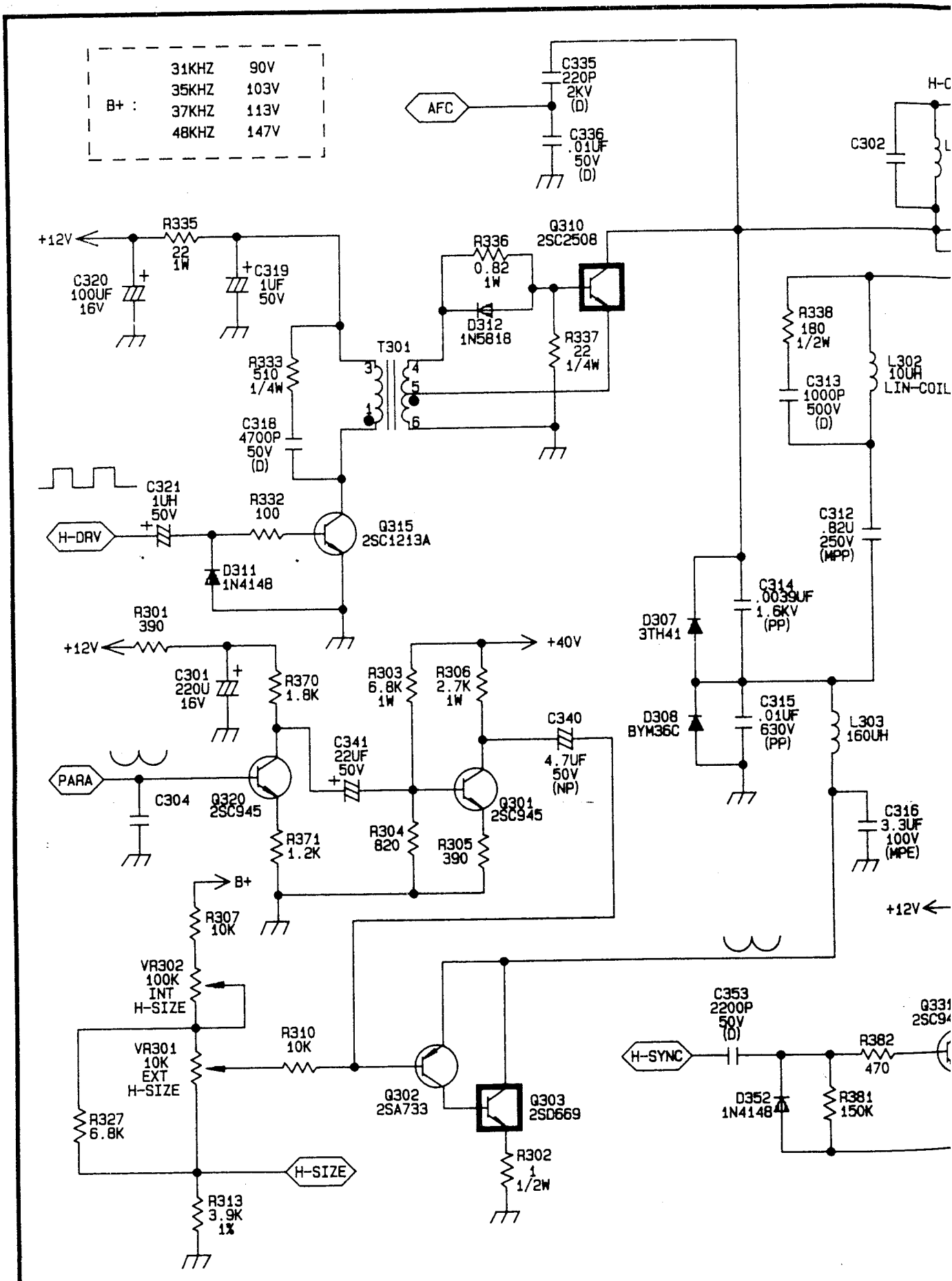
- power On/Off indicator
- suspend mode indicator with flashing
- universal power supply
- power On auto degaussing
- tilt and swivel base
- detachable power cable
- VGA resolution at 31.5KHz

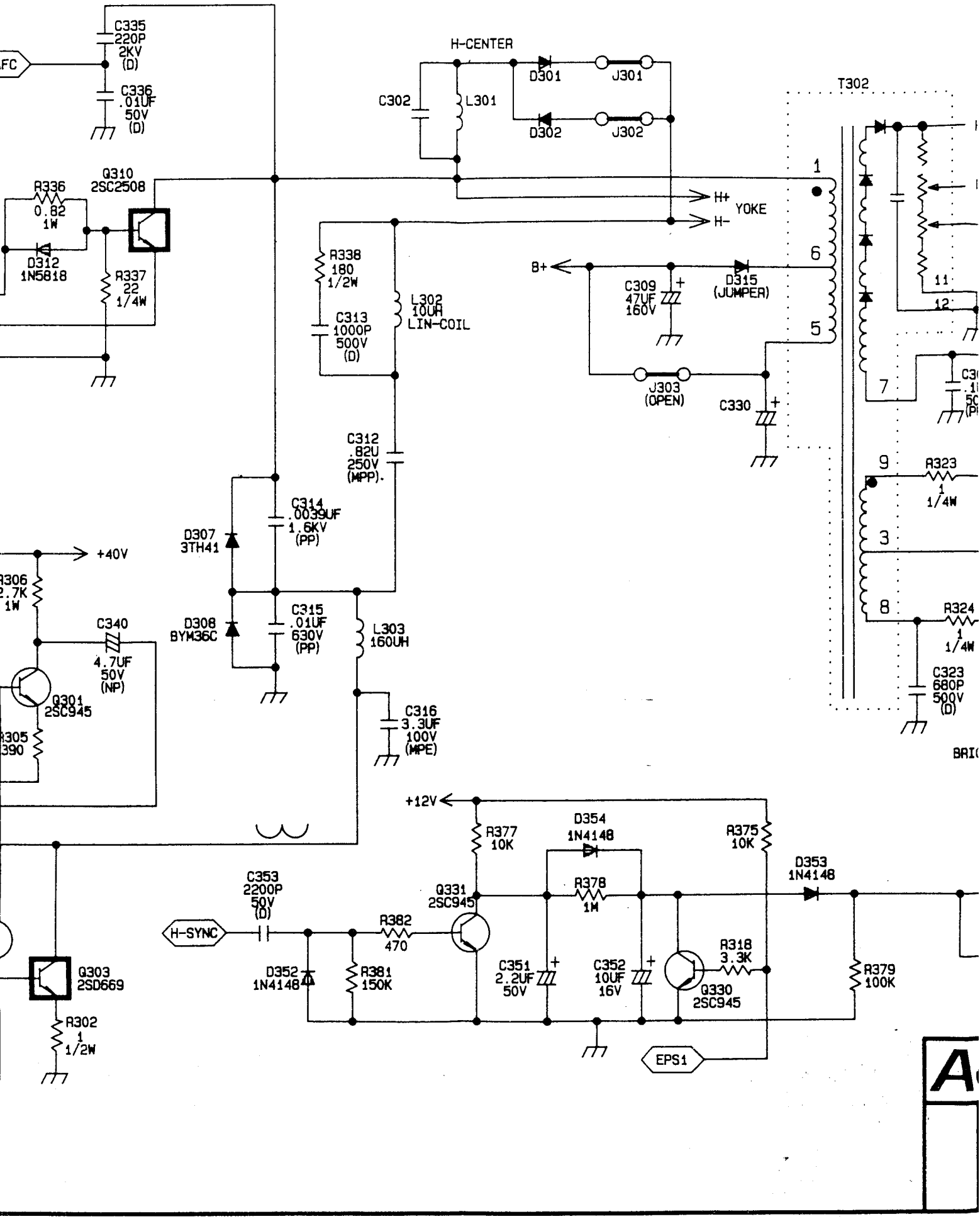
  - 640 x 350
  - 640 x 400
  - 640 x 480

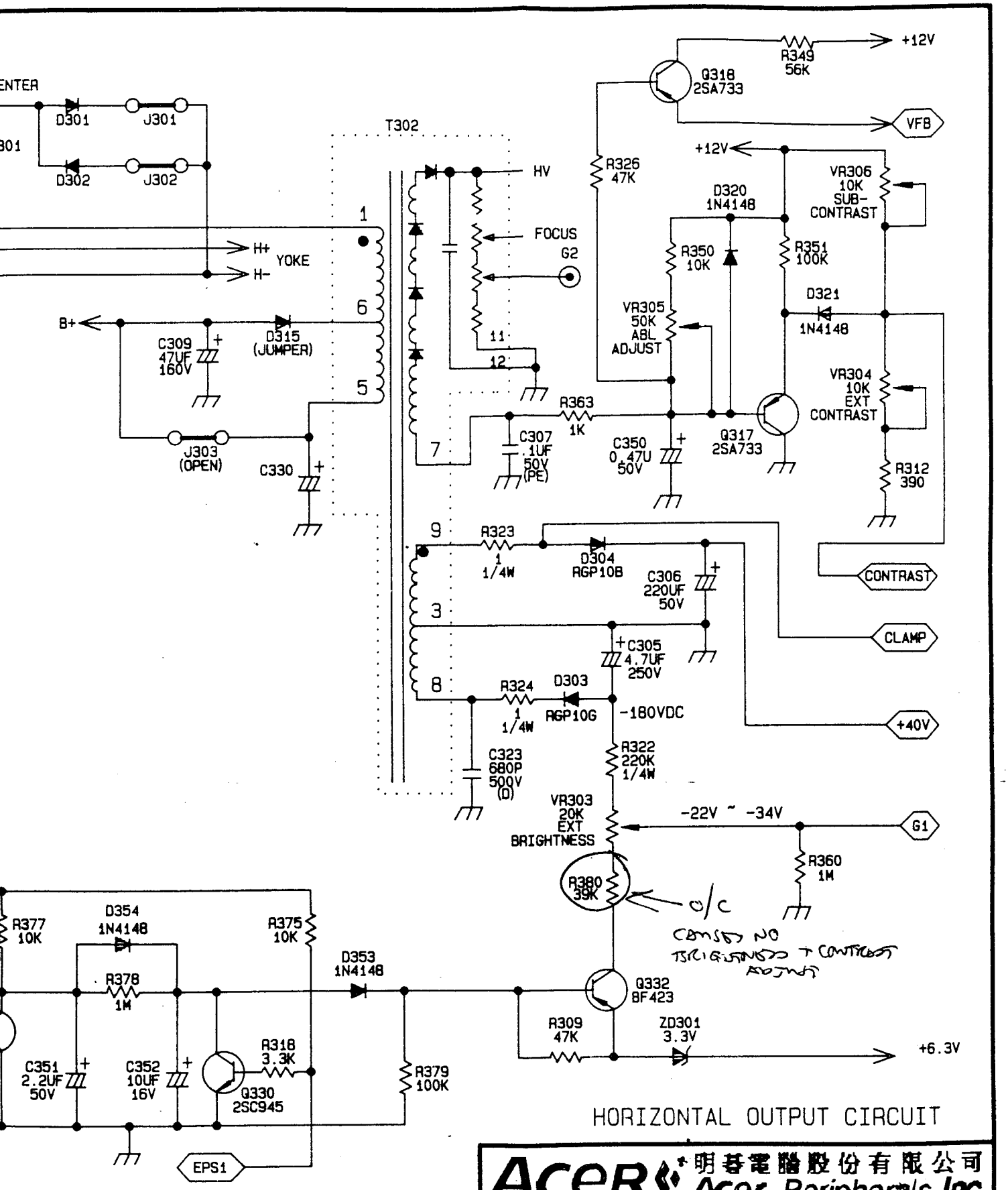
- 8514A resolution at 35.52KHz
- SVGA resolution at 35.16KHz
- automatic scanning horizontal frequencies at

  - 31.5-KHz
  - 35.16-KHz
  - 35 52-KHz
  - all vertical frequencies between 50-Hz and 90-Hz

- optional VLM function


B+ :
31KHZ 90V
35KHZ 103V
37KHZ 113V
48KHZ 147V
AFC
C335 220P 2KV (D)
C336 .01UF 50V (D)
C302
+12V
R335 22 1W
C320 100UF 16V
C319 1UF 50V
R336 0.82 1W
Q310 2SC2508
D312 1N5818
R337 22 1/4W
T301
R333 510 1/4W
C318 4700P 50V (D)
R338 180 1/2W
C313 1000P 500V (D)
L302 10UH LIN-COIL
C321 1UH 50V
H-DRV
R332 100
Q315 2SC1213A
D311 1N4148
C312 .82U 250V (MPP)
C314 .0039UF 1.6KV (PP)
D307 3TH41
R301 390
+12V
C301 220U 16V
R370 1.8K
R303 6.8K 1W
R306 2.7K 1W
+40V
C340 4.7UF 50V (NP)
D308 BYM36C
C315 .01UF 630V (PP)
L303 160UH
PARA
C304
C341 22UF 50V
Q320 2SC945
Q301 2SC945
R371 1.2K
R304 820
R305 390
C316 3.3UF 100V (MPE)
+12V
B+
R307 10K
VR302 100K INT H-SIZE
VR301 10K EXT H-SIZE
R310 10K
C353 2200P 50V (D)
H-SYNC
R382 470
D352 1N4148
R381 150K
Q302 2SA733
Q303 2SD669
R327 6.8K
H-SIZE
R302 1 1/2W
R313 3.9K 1%


C335
220P
2KV
(D)
C336
.01UF
50V
(D)
H-CENTER
C302
L301
D301
J301
D302
J302
T302
Q310
2SC2508
R336
0.82
1W
D312
1N5818
R337
22
1/4W
H+
H-
YOKE
R338
180
1/2W
C313
1000P
500V
(D)
L302
10UH
LIN-COIL
8+
C309
47UF
160V
D315
(JUMPER)
J303
(OPEN)
C330
C312
.82U
250V
(MPP).
C314
.0039UF
1.6KV
(PP)
D307
3TH41
+40V
C340
4.7UF
50V
(NP)
D308
BYM36C
C315
.01UF
630V
(PP)
L303
160UH
C316
3.3UF
100V
(MPE)
R323
1/4W
R324
1/4W
C323
680P
500V
(D)
+12V
R377
10K
D354
1N4148
R375
10K
D353
1N4148
C353
2200P
50V
(D)
Q331
2SC945
R378
1M
H-SYNC
R382
470
D352
1N4148
R381
150K
C351
2.2UF
50V
C352
10UF
16V
R318
3.3K
Q330
2SC945
R379
100K
Q303
2SD669
R302
1
1/2W
EPS1



HORIZONTAL OUTPUT CIRCUIT

ACER 明碁電腦股份有限公司 Acer Peripherals, Inc.			
	7133D (MAIN.CKT) SCHEMATICS		
SIZE A4	33DMN3		REV. B
DATE: 8/23/1993		SHEET	3 OF 4